

Staff Report of Investigation

Marion County Solar Project
Marion County Solar Project, LLC

Case No. 21-0036-EL-BGN

September 13, 2021

**In the Matter of the Application of Marion County Solar)
Project, LLC for a Certificate of Environmental) Case No. 21-0036-EL-BGN
Compatibility and Public Need)**

Staff Report of Investigation

Submitted to the
OHIO POWER SITING BOARD

BEFORE THE POWER SITING BOARD OF THE STATE OF OHIO

**In the Matter of the Application of Marion County Solar)
Project, LLC for a Certificate) Case No. 21-0036-EL-BGN
of Environmental Compatibility and Public Need)**

Chair, Public Utilities Commission	Director, Department of Natural Resources
Director, Department of Agriculture	Public Member
Director, Development Services Agency	Ohio House of Representatives
Director, Environmental Protection Agency	Ohio Senate
Director, Department of Health	

To the Honorable Power Siting Board:

In accordance with the Ohio Revised Code (R.C.) 4906.07(C) and rules of the Ohio Power Siting Board (Board), the staff of the Public Utilities Commission of Ohio (Staff) has completed its investigation in the above matter and submits its findings and recommendations in this Staff Report for consideration by the Board.

The findings and recommendations contained in this report are the result of Staff coordination with the following agencies that are members of the Board: Ohio Environmental Protection Agency, the Ohio Department of Health, the Ohio Development Services Agency, the Ohio Department of Natural Resources, and the Ohio Department of Agriculture. In addition, Staff coordinated with the Ohio Department of Transportation, the Ohio Historic Preservation Office, the U.S. Fish and Wildlife Service, and the U.S. Army Corps of Engineers.

In accordance with R.C. 4906.07(C) and 4906.12, copies of this Staff Report have been filed with the Docketing Division of the Public Utilities Commission of Ohio to be served upon the Applicant or its authorized representative, the parties of record, and pursuant to Ohio Administrative Code 4906-3-06, the main public libraries of the political subdivisions in the project area.

The Staff Report presents the results of Staff's investigation conducted in accordance with R.C. Chapter 4906 and the rules of the Board, and does not purport to reflect the views of the Board nor should any party to the instant proceeding consider the Board in any manner constrained by the findings and recommendations set forth herein.

Respectfully submitted,



Theresa White
Executive Director
Ohio Power Siting Board

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I. POWERS AND DUTIES

OHIO POWER SITING BOARD

The authority of the Ohio Power Siting Board (Board or OPSB) is prescribed by Ohio Revised Code (R.C.) Chapter 4906. R.C. 4906.03 authorizes the Board to issue certificates of environmental compatibility and public need for the construction, operation, and maintenance of major utility facilities defined in R.C. 4906.01. Included within this definition of major utility facilities are: electric generating plants and associated facilities designed for, or capable of, operation at 50 megawatts (MW) or more; electric transmission lines and associated facilities of a design capacity of 100 kilovolts (kV) or more; and gas pipelines greater than 500 feet in length and more than nine inches in outside diameter, and associated facilities, designed for transporting gas at a maximum allowable operating pressure in excess of 125 pounds per square inch. In addition, pursuant to R.C. 4906.20, the Board authority applies to economically significant wind farms, defined in R.C. 4906.13(A) as wind turbines and associated facilities with a single interconnection to the electrical grid and designed for, or capable of, operation at an aggregate capacity of five MW or greater but less than 50 MW. R.C. 4906.13 excludes from economically significant wind farms, one or more wind turbines and associated facilities that are primarily dedicated to providing electricity to a single customer at a single location and that are designed for, or capable of, operational at an aggregate capacity of less than 20 MW, measured at the customer's point of interconnection (POI) to the electrical grid.

Membership of the Board is specified in R.C. 4906.02(A). The voting members include: the Chair of the Public Utilities Commission of Ohio (PUCO or Commission) who serves as Chair of the Board; the directors of the Ohio Environmental Protection Agency (Ohio EPA), the Ohio Department of Health (ODH), the Ohio Development Services Agency (ODSA), the Ohio Department of Agriculture (ODA), and the Ohio Department of Natural Resources (ODNR); and a member of the public, specified as an engineer, appointed by the Governor from a list of three nominees provided by the Ohio Consumers' Counsel. Ex officio Board members include two members (with alternates) from each house of the Ohio General Assembly.

NATURE OF INVESTIGATION

The Board has promulgated rules and regulations, found in Ohio Administrative Code (Ohio Adm.Code) 4906:1-01 et seq., which establish application procedures for major utility facilities and economically significant wind farms.

Application Procedures

Any person that wishes to construct a major utility facility or economically significant wind farm in this state must first submit to the Board an application for a certificate of environmental compatibility and public need.¹ The application must include a description of the facility and its location, a summary of environmental studies, a statement explaining the need for the facility and how it fits into the Applicant's energy forecasts (for transmission projects), and any other information the Applicant or Board may consider relevant.²

1. R.C. 4906.04 and 4906.20.

2. R.C. 4906.06(A) and 4906.20(B)(1).

Within 60 days of receiving an application, the Chair must determine whether the application is sufficiently complete to begin an investigation.³ If an application is considered complete, the Board or an administrative law judge will cause a public hearing to be held 60 to 90 days after the official filing date of the completed application.⁴ At the public hearing, any person may provide written or oral testimony and may be examined by the parties.⁵

Staff Investigation and Report

The Chair will also cause each application to be investigated and a report published by the Board's Staff not less than 15 days prior to the public hearing.⁶ The report sets forth the nature of the investigation and contains the findings and conditions recommended by Staff.⁷ The Board's Staff, which consists of career professionals drawn from the staff of the PUCO and other member agencies of the Board, coordinates its investigation among the agencies represented on the Board and with other interested agencies such as the Ohio Department of Transportation (ODOT), the Ohio Historic Preservation Office (OHPO), and the U.S. Fish and Wildlife Service (USFWS).

The technical investigations and evaluations are conducted pursuant to Ohio Adm.Code 4906-1-01 et seq. The recommended findings resulting from Staff's investigation are described in the Staff Report pursuant to R.C. 4906.07(C). The report does not represent the views or opinions of the Board and is only one piece of evidence that the Board may consider when making its decision. Once published, the report becomes a part of the record, is served upon all parties to the proceeding and is made available to any person upon request.⁸ A record of the public hearings and all evidence, including the Staff Report, may be examined by the public at any time.⁹

Board Decision

The Board may approve, modify and approve, or deny an application for a certificate of environmental compatibility and public need.¹⁰ If the Board approves, or modifies and approves an application, it will issue a certificate subject to conditions. The certificate is also conditioned upon the facility being in compliance with applicable standards and rules adopted under the Ohio Revised Code.¹¹

Upon rendering its decision, the Board must issue an opinion stating its reasons for approving, modifying and approving, or denying an application for a certificate of environmental compatibility and public need.¹² A copy of the Board's decision and its opinion is memorialized upon the record and must be served upon all parties to the proceeding.¹³ Any party to the proceeding that believes its issues were not adequately addressed by the Board may submit within

3. Ohio Adm.Code 4906-3-06(A).

4. R.C. 4906.07(A) and Ohio Adm.Code 4906-3-08.

5. R.C. 4906.08(C).

6. R.C. 4906.07.

7. Ohio Adm.Code 4906-3-06(C).

8. R.C. 4906.07(C) and 4906.10.

9. R.C. 4906.09 and 4906.12.

10. R.C. 4906.10(A).

11. R.C. 4906.10.

12. R.C. 4906.11.

13. R.C. 4906.10(C).

30 days an application for rehearing.¹⁴ An entry on rehearing would then be issued by the Board within 30 days and may be appealed within 60 days to the Supreme Court of Ohio.¹⁵

CRITERIA

Staff developed the recommendations and conditions in this *Staff Report of Investigation* pursuant to the criteria set forth in R.C. 4906.10(A), which reads, in part:

The board shall not grant a certificate for the construction, operation, and maintenance of a major utility facility, either as proposed or as modified by the board, unless it finds and determines all of the following:

- (1) The basis of the need for the facility if the facility is an electric transmission line or gas pipeline;
- (2) The nature of the probable environmental impact;
- (3) That the facility represents the minimum adverse environmental impact, considering the state of available technology and the nature and economics of the various alternatives, and other pertinent considerations;
- (4) In the case of an electric transmission line or generating facility, that the facility is consistent with regional plans for expansion of the electric power grid of the electric systems serving this state and interconnected utility systems and that the facility will serve the interests of electric system economy and reliability;
- (5) That the facility will comply with Chapters 3704, 3734, and 6111 of the Revised Code and all rules and standards adopted under those chapters and under section 4561.32 of the Revised Code. In determining whether the facility will comply with all rules and standards adopted under section 4561.32 of the Revised Code, the board shall consult with the office of aviation of the division of multimodal planning and programs of the department of transportation under section 4561.341 of the Revised Code;
- (6) That the facility will serve the public interest, convenience, and necessity;
- (7) In addition to the provisions contained in divisions (A)(1) to (6) of this section and rules adopted under those divisions, what its impact will be on the viability as agricultural land of any land in an existing agricultural district established under Chapter 929 of the Revised Code that is located within the site and alternative site of the proposed major utility facility. Rules adopted to evaluate impact under division (A)(7) of this section shall not require the compilation, creation, submission, or production of any information, document, or other data pertaining to land not located within the site and alternative site; and
- (8) That the facility incorporates maximum feasible water conservation practices as determined by the board, considering available technology and the nature and economics of the various alternatives.

14. R.C. 4903.10 and 4906.12.

15. R.C. 4903.11, 4903.12, and 4906.12.

II. APPLICATION

APPLICANT

The Application was submitted by Marion County Solar Project, LLC (Applicant), which is a wholly owned subsidiary of Savion, LLC. Savion, LLC was founded in 2019 and has over 100 employees and is headquartered in Kansas City, Missouri. Savion has developed over 10 gigawatts of solar projects across 28 states. The Marion County Solar facility would be constructed, operated, and maintained by the Applicant.

HISTORY OF THE APPLICATION

On February 4, 2021, the Applicant filed a pre-application notification letter regarding the project.

On February 17, 2021, the Applicant conducted a virtual public informational meeting.

On March 5, 2021, the Applicant filed its application for a certificate of environmental compatibility and public need to construct the project.

On April 20, April 27, July 16, July 23, August 6, and August 23, 2021, the Applicant filed responses to data requests made by the Board's staff (Staff).

On May 4, 2021, the Executive Director of the OPSB issued a letter of compliance regarding the application to the Applicant.

On August 26, 2021, the Ohio Farm Bureau Federation filed a Motion to Intervene in the proceeding.

A local public hearing has been scheduled for September 28, 2021, at 6:00 p.m.

The evidentiary hearing is scheduled to commence on October 28, 2021, at 10:00 a.m.

This summary of the history of the application does not include every filing in case number 21-0036-EL-BGN. The docketing record for this case, which lists all documents filed to date, can be found online at <http://dis.puc.state.oh.us>.

PROJECT DESCRIPTION

The Applicant proposes to construct the Marion County Solar Project, an up to 100 MW solar powered generating facility located in Marion Township, Marion County. The project would consist of large arrays of ground-mounted photovoltaic (PV) modules, commonly referred to as solar panels, as well as a battery energy storage system (BESS) capable of discharging 203,000 kW-h of electrical energy at a 20.3 MW capacity into the grid. The project would include associated facilities including access roads, electric collection lines, inverters, weather stations, a facility substation, a generation interconnect (gen-tie) line, an operations and maintenance facility, and a temporary construction laydown yard. The project would be secured by perimeter fencing and accessed through gated entrances. The Applicant has or would design the facility to account for setbacks of at least 300 feet from generating equipment to non-participating residences and at least 50 feet from generating equipment to non-participating parcels and public roads. The Applicant has leased a 970-acre project area. The Applicant intends to utilize approximately 724 acres for construction and operation.

Solar Panels and Racking

Solar panels would be attached to a single-axis tracker racking system supported by steel posts embedded, driven, drilled, or screwed approximately seven to 11 feet into the ground. The Applicant anticipates that the facility would be comprised of 45,500 to 248,000 monocrystalline, bifacial PV panels. The highest point of each solar module would be approximately 7.5 feet above the ground. The Applicant has not selected a panel model at this point. However, the Applicant is considering panels manufactured by Jinko, Longi, Risen, and Trina.¹⁶ If a panel module other than those provided in the Application is selected, then technical specifications and other pertinent safety data will be provided to the Board close to the commencement of construction.

Collection System

The Applicant would install an underground collector system made up of a network of electric and communication lines that would transmit the electric power from the solar arrays to a central location. Some portions of the collector system would be buried while others would be above ground. The overhead sections are anticipated to be 30 feet tall or less. The Applicant proposes to install up to 20 miles of buried 34.5 kV collection line. The belowground lines would be installed by the direct burial method or the open trench method to a minimum depth of 36 inches, or, in the case of one stream, by horizontal directional drilling (HDD).

Electricity from the solar panels would be generated in direct current (DC). DC power from the solar panels would be delivered to circuits, which would be routed through cable trays, then to combiner boxes. Power from the combiner boxes would be transmitted to groups of components, collectively called an inverter. The proposed facility design includes 22 inverters, which convert energy from DC to alternating current (AC).

Collection Substation and 138 kV Generation Interconnection Line

The Applicant proposes to construct a collection substation where the voltage supplied from the inverters would be increased from 34.5 kV to 138 kV by use of a transformer. The collection substation support structures would be approximately 110 feet in height. The Applicant proposes to interconnect from the collection substation to a new point-of-interconnection (POI) switchyard that would be owned and operated by American Transmission Systems, Inc. (ATSI), via an approximately 1,000 feet long, 138 kV gen-tie line. Connection of the 138 kV gen-tie line to the new POI switchyard would then allow the electricity to be delivered to the electric grid.

Battery Energy Storage System (BESS)

The Applicant proposes a 20.3 MW BESS consisting of up to 32 battery containers, similar in size to a shipping container, as well as eight inverters and one project control switchgear. Each battery container would include a fire suppression system. The BESS is anticipated to be able to discharge or store approximately 203,000 kW-h of energy storage with a 20.3 MW capacity. BESS often have multiple uses to the electric grid such as being able to be dispatched to firm or solidify an

16. Current solar panel technology are one of two basic types: crystalline or thin-film. Crystalline modules are silicon-based. Thin-film modules use several alternative semi-conducting compositions (such as cadmium telluride or copper indium gallium selenide). When the selected panel is a thin-film module, the panels typically contain only exceedingly small amounts of potentially hazardous materials, all of which are safely encased in polymer and tempered glass within an aluminum frame. The manufacturing technical data sheets for the manufacturers under consideration, which currently are manufacturers crystalline modules, are included in Exhibit B of the Application.

intermittent output of the solar facility or participate in frequency regulation response. The Applicant is currently refining the integration of the BESS into an economic design of the solar generating facility. The Applicant is considering battery manufacturers including Sungrow-Samsung SDI Energy Storage Power Supply Co., Sungrow Power Supply Co., and Power Electronics.¹⁷

Access Roads

The Applicant proposes to construct approximately 5.4 miles of gravel access roads. The access roads would be up to 16 feet wide along straightaways and slightly wider at curves and intersections.

Construction Laydown Area

The Applicant proposes to use one approximately four-acre in size temporary construction laydown area. The laydown area would be used during construction for material and equipment storage, trailers, and employee parking. After construction is complete, the laydown area would be restored.

Meteorological Towers

The project would include up to four permanent meteorological towers or weather stations designed to measure solar irradiance and other weather conditions. The towers would be approximately four to 14 feet tall. The meteorological towers would be installed on a concrete base adjacent to an inverter. The locations would be determined during the final design stage.

Operations and Maintenance Facility

The on-site operations and maintenance (O&M) facility would consist of a construction type trailer that would house administrative, O&M equipment, and office space. The size of the O&M trailer would occupy approximately two acres.

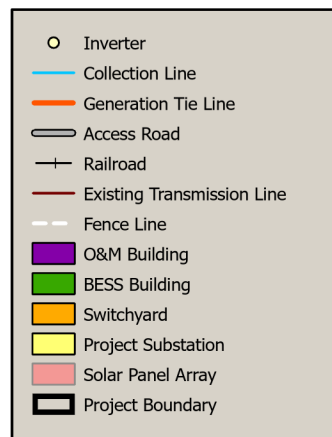
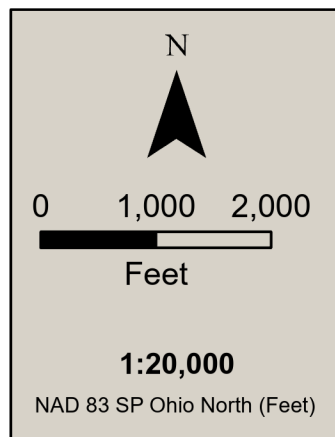
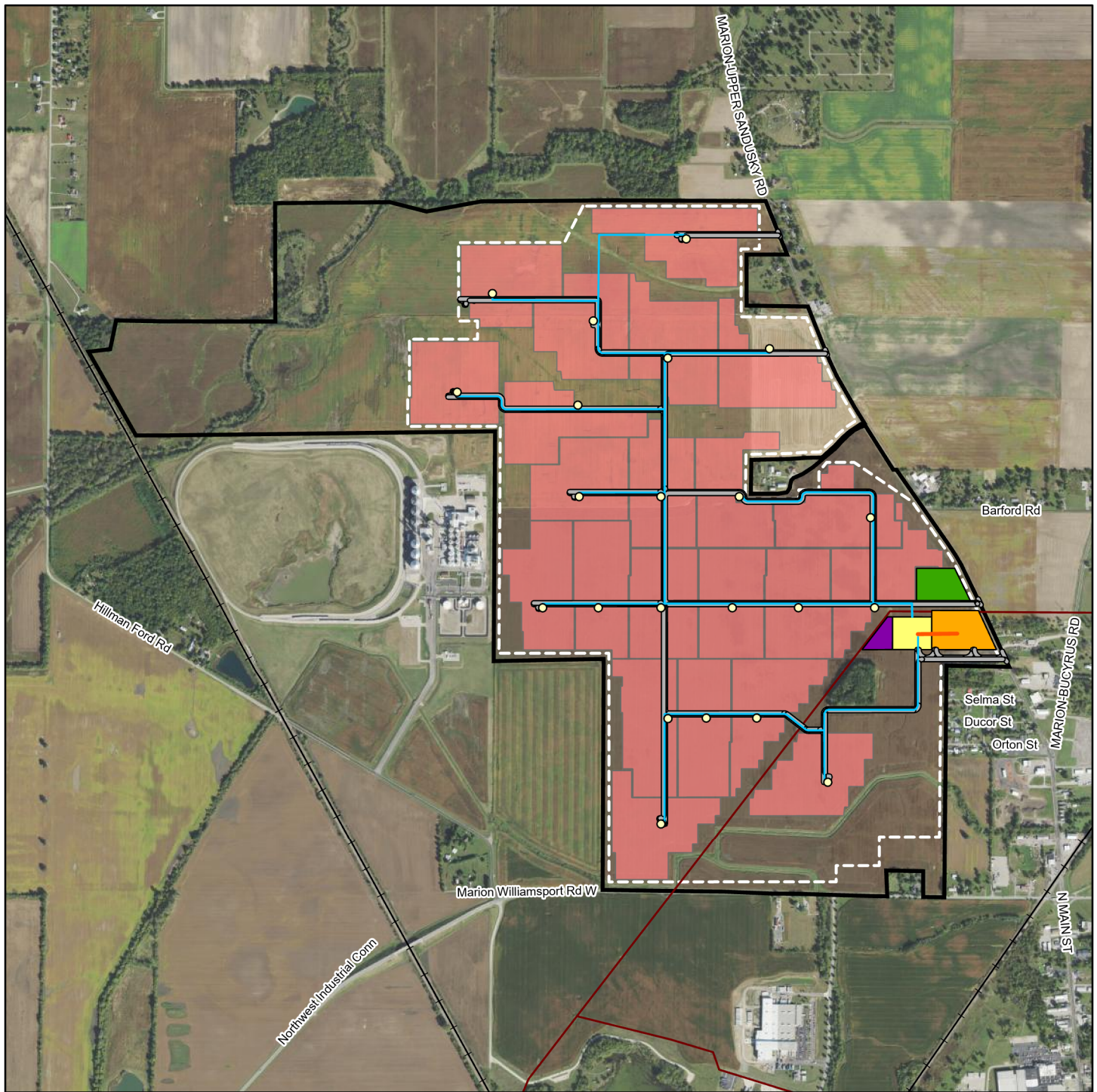
Fencing

The Applicant proposes to surround the perimeter of the solar facility with either a six-foot tall chain link fence topped by a one-foot-tall strand of barbed wire or a seven-foot-tall chain link fence. Staff typically recommends the use of agricultural fencing.

Project Schedule

The Applicant expects to finalize design of the project in the fourth quarter of 2022. Construction is expected to also begin in the fourth quarter of 2022 and last 12 to 18 months. Construction is currently anticipated to be completed in the fourth quarter of 2023, at which time the facility would be placed into service.

17. Application at Exhibit B.



Overview Map

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Marion County Solar

Maps are presented solely for the purpose of providing a visual representation of the project in the staff report, and are not intended to modify the project as presented by the Applicant in its certified application and supplemental materials.

III. CONSIDERATIONS AND RECOMMENDED FINDINGS

In the Matter of the Application of Marion County Solar Project, LLC for a Certificate of Environmental Compatibility and Public Need, Staff submits the following considerations and recommended findings pursuant to R.C. 4906.07(C) and 4906.10(A).

Considerations for R.C. 4906.10(A)(1)

BASIS OF NEED

Pursuant to R.C. 4906.10(A)(1), the Board must determine the basis of the need for the facility only if the facility is an electric transmission line or gas pipeline. Therefore, Staff has found an analysis of R.C. 4906.10(A)(1) to be inapplicable to the facility in question.

Recommended Findings

Staff recommends that the Board find that the basis of need as specified under R.C. 4906.10(A)(1) is not applicable to this facility, as the facility is neither an electric transmission line nor a gas pipeline.

Considerations for R.C. 4906.10(A)(2)

NATURE OF PROBABLE ENVIRONMENTAL IMPACT

Pursuant to R.C. 4906.10(A)(2), the Board must determine the nature of the probable environmental impact of the proposed facility. Staff has found the following with regard to the nature of the probable environmental impact.

Overview

As described above, membership of the Board is specified in R.C. 4906.02(A) and its voting membership is comprised of leadership from the PUCO, Ohio EPA, ODH, ODSA, ODA, ODNR, and a member of the public specified as an engineer. Also as described above, the Board's Staff consists of career professionals from member agencies of the Board and their areas of expertise. Therefore, consideration of the nature of the probable environmental impact of a proposed facility incorporates such areas of expertise, as described below.

Socioeconomic Impacts¹⁸

Land Use

The predominant land use within the project area is agriculture. The Applicant states that all impacts from construction and operation of the facility would occur on agricultural land. Approximately 710 acres of agricultural land would be converted to solar and ancillary uses. The Applicant does not intend to remove or relocate any structures. Significant impacts to residential, commercial, industrial, recreational, and institutional land uses are not anticipated, and surrounding agricultural land use would continue with minimal disruption.

Regional Planning

The project would reside within Marion County. Marion County's 2011 Land Use Plan does not propose changes to the current zoning of the project area, which is presently agriculture/low density residential land uses. This solar facility would align with the Marion County Land Use Plan by not hindering regional development of adjacent areas and allowing agricultural use to continue.

Staff asserts that the solar facility is not expected to conflict with local land use plans. The proposed solar facility would be expected to aid regional development by increasing local tax revenues. The project is consistent with agricultural industry support, in that the facility would provide

18. "It is the mission of the Ohio Development Services Agency to help create jobs and build strong communities in Ohio, while ensuring accountability and transparency of taxpayer money exceptional customer service." (Ohio.gov, *Development Services Agency*, <https://ohio.gov/wps/portal/gov/site/government/state-agencies/development-services-agency>). See e.g., RC 122.011(A) states, in part, that the development services agency shall develop and promote plans and programs designed to assure that state resources are efficiently used, economic growth is properly balanced, community growth is developed in an orderly manner, and local governments are coordinated with each other and the state, and for such purposes may, among other things, cooperate with and provide technical assistance to state departments, regional and local planning commissions, and other appropriate organizations for the solution of community problems. According to R.C. 122.01(B)(1), "'community problems' includes, but is not limited to, taxation, fiscal administration, governmental structure and organization, intergovernmental cooperation, education and training, employment needs, community planning and development, air and water pollution, public safety and the administration of justice, mass transportation, community facilities and services, health, welfare, recreation, open space, and the development of human resources."

supplemental income to farmers and the land could be returned to agricultural production upon decommissioning.

Recreation

Construction and operation of the facility would not physically impact any recreational areas. The Applicant studied for the presence of recreational areas within ten miles of the project area. Twenty-four recreation areas were identified. However, of these 24 only one, Quarry Park, is within two miles of the project area. This park would only experience limited visibility to the facility.

Aesthetics

Aesthetic impacts and considerations are always measured against the surrounding land use features and potential viewers' subjective opinions. The rural nature of the project vicinity limits the number of potential viewers. Transportation corridors typically are smaller and much more lightly traveled, which reduces the number of viewing impacts. Existing woodlots are also able to offer additional natural screening. The project area predominantly consists of agricultural land. Traffic volume on roads throughout the project area is typically light, thus abating the potential number of viewers.

The solar panels would be installed no higher than 15 feet above ground level. Based on the results of the Applicant's two-mile visual resources report, the solar panels would not likely be visible at locations beyond 0.4 miles away and difficult to identify in views greater than one mile away.¹⁹

Staff reviewed the Applicant's visual impact analysis, which includes proposed mitigation in the form of vegetative screening or good neighbor agreements at selected sensitive areas around the project site. The Applicant's landscape mitigation plan proposes the installation of planting modules, categorized into tiers based upon levels of aesthetic impact, along the facility fence line. The goal of the mitigation plan is to soften viewshed impacts and to blend the facility into the existing vegetation. The Applicant's plan would provide for the installation of numerous plant species that would vary in height and variety, as determined by the current location of sensitive receptors (such as non-participating residential structures) that are adjacent to the proposed facility.

The Applicant's plan also envisions the potential for aesthetic mitigation through negotiated good neighbor agreements. The plan proposes more vegetation density to mitigate potential aesthetic impacts that are related to non-participating residences with a direct line of sight to the planned facility. Staff's landscaping condition requires that the Applicant also consult with a certified professional landscape architect. To address impacts to the traveling public, nearby communities, and recreationists, Staff also recommends that the Applicant adjust its landscape and lighting plan to incorporate appropriate planting measures such as shrub and tree planting or enhanced pollinator plantings.

Staff recommends that the Applicant's landscape and lighting plan incorporate design features to reduce impacts in areas where an adjacent non-participating parcel contains a residence with a direct line of sight to the project's infrastructure. Staff recommends that aesthetic impact

19. Application at Appendix Y, *Visual Resources Technical Report*, p. 9.

mitigation include native vegetative plantings, alternate fencing, good neighbor agreements, or other methods in consultation with affected landowners and subject to Staff review.

In addition to vegetative screening mitigation measures, Staff is concerned about aesthetic impacts related to the project's perimeter fencing. Chain-link fence designs have previously elicited many negative public comments and concerns from adjacent residents living near proposed solar facilities. These concerns center on the concepts that chain-link fences generally are more aesthetically intrusive, out-of-character in rural settings, and less wildlife friendly than fencing options such as deer fences and wooden fences with woven wire designs.

In response to Staff's data request docketed August 23, 2021, the Applicant stated that it is considering the use of a fence type that is both small-wildlife permeable and aesthetically fitting for the project area. However, the Applicant also stated in the same response that the selection of fencing materials and design types would depend on market factors, future decisions by investors, the project owner, and the project operator. Staff believes this degree of ambiguity does not adequately address aesthetic and wildlife concerns. Therefore, Staff is recommending a fencing condition to alleviate aesthetic and wildlife concerns. With implementation of Staff's landscape/-lighting and fencing conditions, the overall expected aesthetic impact would be minimal.

Cultural Resources²⁰

The Applicant enlisted a consultant to gather background information and complete cultural resources studies for this project. A Phase I cultural archaeological reconnaissance survey was completed and submitted to the Ohio Historic Preservation Office (OHPO) for review in June 2021. In the archaeology survey report, it was determined that a total of 80 archaeological sites were newly identified within the project area as prehistoric isolated finds and were recommended as ineligible for listing in the National Register of Historic Places (NRHP). The OHPO issued the Applicant a concurrence letter dated July 16, 2021 regarding the potential for impacts to archaeological sites from this project and agrees that the 80 sites are ineligible for listing in the NRHP and that no additional archaeological investigation is needed.

On July 16, 2021, the Applicant filed a supplement for the record in this case, which included additional information regarding the Phase I archaeological reconnaissance survey. The Applicant identified 273 resources greater than 50 years old with a view of the project. Of these, one was previously listed in the NRHP, two had determinations of eligibility that recommended NRHP eligibility, one was previously surveyed but unevaluated but is now recommended as eligible for listing in the NRHP, and one newly surveyed resource is recommended as eligible for listing on the NRHP. The remaining 268 newly surveyed resources were recommended as not eligible. The Applicant concludes that views of the project would be limited or non-existent for the resources

20. According to RC 149.53, "[a]ll departments, agencies, units, instrumentalities, and political subdivisions of the state shall cooperate with the Ohio history connection and the Ohio historic site preservation advisory board in the preservation of archaeological and historic sites and in recovery of scientific information from such sites, and for such purposes shall, whenever practical, by contract or otherwise provide for archaeological and historic survey and salvage work during the planning phases, before work on a public improvement begins or at other appropriate times." In Ohio, the Ohio Historic Preservation Office (OHPO) is part of the Ohio History Connection. (See, Ohio History Connection, *About Section 106 Review*, <<https://www.ohiohistory.org/preserve/state-historic-preservation-office/hpreviews/about-section-106-review>>).

recommended eligible for listing in the NRHP and that the project would not have an impact on these resources. OHPO had follow up questions on the initial architectural survey report and the Applicant responded and sent the latest version of the architectural survey report to OHPO on September 9, 2021. Staff has recommended that the Applicant coordinate with OPHO and Staff if avoidance or mitigation needs to be made regarding architectural resources.

Staff has determined that minimal adverse impacts to cultural resources would be achieved.

Economic Impact

The Applicant states that it would be responsible for the ownership, construction, operation, and maintenance of the proposed project. The Applicant has obtained the necessary landowner agreements for the project. All other components of the facility would be located entirely on privately-owned land, and voluntary lease agreements between the Applicant and private landowners will accommodate the facility.

The Applicant chose to file its estimated capital and intangible costs, estimated O&M expenses, and estimated delay costs, under seal, and filed a motion for protective order to keep the information confidential. Similar requests have been common practice in many, but not all, solar facility applications.

Total cost comparisons between the proposed facility and other comparable facilities are to be provided in the application. The Applicant referenced a 2020 study conducted by the U.S. Energy Information Agency (USEIA) which states that the capacity-weighted average installed costs of solar PV projects was around \$1,848/kW in 2018 and that its costs are below this range. Also, recent solar PV projects of comparable scale undertaken by the Applicant report similar capital costs. Staff verified the Applicant's assertion that the reported average cost of similar facilities is not substantially different from Applicant's estimated costs for the proposed facility and that the reported average cost of the Applicant's similar facilities is not substantially different from Applicant's estimated costs for the proposed facility.

Operation and maintenance expense comparisons between the proposed facility and other comparable facilities are to be provided in the application. The Applicant referenced a 2018 report published by the U.S Department of Energy's National Renewable Energy Laboratory (NREL) that stated that, on average, utility scale solar operations reported O&M costs totaling \$9.1/kW/year for fixed-tilt PV facilities and \$10.4/kW/year for facilities using tracking systems. Staff verified that the figures put forth by the Applicant were contained in the report and confirmed the Applicant's assertion that its O&M cost estimates were below this amount.

The Applicant provided its estimates of the cost of delays in permitting and construction of the proposed facility, although the estimated costs were filed under seal. The Applicant stated that delays could prevent the project from meeting federal Investment Tax Credit deadlines which could result in the loss of those benefits to the Applicant. The Applicant's characterization of its estimated costs of delays appears reasonable to Staff.

The Applicant retained the services of Strategic Economic Research, LLC (SER) to report on the economic impact of the Marion County Solar project. SER used the National Renewable Energy Laboratory's (NREL) Jobs and Economic Development Impact (JEDI) model, the IMPLAN regional economic modeling system, as well as data from the Ohio Department of Taxation, to estimate the economic impact of the construction and operation of the solar farm. Staff verified

that the methodology of the JEDI and IMPLAN models were appropriate for this study and that the estimated impacts reported by the Applicant are reasonable.²¹

In this model, “earnings” are comprised of direct (on-site) wages, indirect (supply-chain labor) wages, and induced (through spending by persons in first two categories). “Output” in this model refers to the value of goods and services produced by direct, indirect, and induced labor. Based on the results of the JEDI model analysis conducted by SER, the Marion County Solar Project is expected to have the following impacts:

Jobs

- 332 construction related jobs for the state of Ohio
- 10 long-term operational jobs for the state of Ohio

Earnings

- \$23.6 million in annual earnings during construction for the state of Ohio
- \$635,000 in annual earnings during facility operations for the state of Ohio

Output

- \$45 million in local output during construction for the state of Ohio
- \$1.6 million in local annual output during facility operation for the state of Ohio.

The Marion County Solar Project would generate an estimated \$700,000 annually for the Marion County taxing districts. This estimate is based on a potential Payment in Lieu of Taxes (PILOT) plan in which Marion County Solar would pay \$7,000/MW annually for a 100 MW facility. At this time, the Applicant has not entered into a PILOT agreement with Marion County.

Glare

Glare is the phenomenon where sunlight reflects from a surface to create a duration of bright light. Glare also encompasses glint, which is a momentary flash of bright light. Potential impacts of this reflection from solar panel(s) could be a brief reduction in visibility, afterimage, a safety risk to pilots, or a perceived nuisance to neighbors. The Applicant considered the potential effects of glint and glare in the design of solar array layout and how the panels would be operated.

Solar panels are designed to absorb as much sunlight as possible with minimal reflectivity and include an anti-reflection coating. The Applicant conducted a glint and glare analysis to identify any potential impacts to pilots of planes landing at one airport, helicopter pilots at three heliports, train engineers, along local roads, and at nearby residents in the project area.²² To perform the analysis of glare, the Applicant used the ForgeSolar web-based Solar Glare Hazard Analysis Tool (SGHAT) which was developed by Sandia National Laboratories to analyze potential glare at sensitive receptor locations. This software is commonly used by solar facility developers to determine the effect of solar glare. Glare is classified in three categories in the SGHAT tool: (1) the green type, which is associated with a low potential for temporary after-image when observed

21. Strategic Economic Research, LLC is an economic consulting firm located in Bloomington, Illinois.

22. Application at Exhibit O.

prior to a typical blink response time; (2) the yellow type, which is associated with a potential for temporary after-image when observed prior to a typical blink response time; and (3) the red type, which is associated with the permanent retinal damage when observed prior to a typical blink response time. The Applicant found that no glare (i.e., no minutes of either green or yellow type) from the project is predicted to vehicles using the roadways, the local railroad, or nearby neighbors. Also, the Applicant does not anticipate impacts from glare at area airports or heliports and anticipates the facility would not present a risk of glare to pilots making final approaches. Staff agrees with the study results. Staff notes that aesthetic impact mitigation measures that include vegetative plantings may also further reduce potential impacts as part of a landscape and lighting plan.

Decommissioning

The Applicant holds land rights to and estimates that the solar facility can operate for 30 years or more. The Applicant has prepared a decommissioning plan which Staff has reviewed.²³

According to the Applicant's plan, at the end of the useful life of the facility, the solar facility would be decommissioned, and the land be returned to its current use as agricultural land if that land use is chosen by the landowner. The Applicant would coordinate with Staff prior to the start of any decommissioning activities and obtain applicable federal, state, and local permits. The Applicant has preliminarily identified the need for at least the following permits: Section 404 of the Clean Water Act permit; Ohio EPA General Construction Stormwater Permit with Stormwater Pollution Prevention Plan (SWPPP); and Marion County building, road, or erosion control permits.

The Applicant would remove all solar components constructed above ground with few exceptions and the Applicant would remove any below ground structures up to a minimum removal depth of three feet below grade. All the solar components would be properly disposed or recycled. In order to decommission the facility, the Applicant would generally implement the following decommissioning sequence. The Applicant would prepare the site for component removal, including strengthening access roads, where needed. The Applicant would install temporary fencing and implement best management practices (BMPs) to protect sensitive ecological or cultural resources. Next, the solar arrays would be de-energized. Then the Applicant would dismantle solar panels, racking, inverters, and transformers. The Applicant would remove access and internal roads and grade site, unless requested by the landowner to retain the road. The Applicant indicates that drain tiles damaged during decommissioning would be replaced with functional equivalent system(s) as needed or based on landowner preference. Lastly, the Applicant would restore, and revegetate disturbed land to pre-construction conditions to the extent practicable.

The Applicant stated that it anticipates decommissioning activities and restoration, which is often weather dependent, to occur over a 12-month period. Based on the weather dependent nature of site restoration, Staff recommends that the updated decommissioning plan include a requirement to monitor the site for at least one additional year to ensure successful revegetation and rehabilitation

23. Application at Exhibit K.

The Applicant currently approximates that the decommissioning cost is \$ 2,998,643.²⁴ According to the Applicant, this cost estimate is preliminary, and an updated decommissioning plan and cost estimate based on the final design layout would be provided prior to commencement of construction. Prior to the start of construction, Staff recommends that the Applicant retain an independent and registered professional engineer to calculate the net decommissioning costs for the solar facility with line items and analysis of the BESS decommissioning. Cost estimates would be recalculated every five years over the life of the facility. This cost calculation would include the total cost estimate for implementing the decommissioning plan and account for any unanticipated contingencies and would exclude salvage value estimates of the solar facility components.

The Applicant states it would salvage, recycle, or haul offsite to a licensed solid waste disposal facility all solar components. Some of those solar components are anticipated to have a resale or salvage value. Those salvageable items typically are solar modules, tracking system, steel piles, inverters, and transformers. If solar modules are to be disposed, the Applicant intends to conduct the disposal in compliance with federal, state, and local laws and regulations. The solar panel manufacturer, Jinko Solar, which is a manufacturer under consideration and presented to the Board in Exhibit A of the Application, manufactures solar panels that have been certified to comply with the US EPA's toxicity characteristics leachate procedure (TCLP) test and meet U.S. EPA definition of non-hazardous waste. The Applicant stated it would use panels that have been certified to comply with the US EPA's TCLP.

The BESS is a unique component for this solar facility. The currently proposed BESS layout would consist of the following major components: 32 battery containers, eight inverters, and project control switchgear. Staff has found that the decommissioning plan and cost estimate does not sufficiently address decommissioning of the BESS. Staff has found that costs to decommission the BESS may be in the \$4M to \$5M range. Staff has also found that the Resource Conservation and Recovery Act regulates the generation, transportation, treatment, storage, and disposal of the batteries as hazardous solid waste. Staff expects the Applicant may need to manage the batteries as hazardous waste to properly collect and recycle them at the end of their useful life. This may increase the cost of decommissioning the BESS. The decommissioning cost estimate does not currently include removal, transportation to a recycle station, use of a skilled workforce required to handle the system, recordkeeping, testing/sampling, basic remediation, or contingency for minor contamination. Staff does not expect site remediation to be necessary, because the batteries will be enclosed within containers, but should be analyzed.

Staff believes that BESS components may be recyclable or have an inherent salvage value. However, Staff notes that according to the Energy Storage Association Corporate Responsibility Initiative document entitled "Guidelines for End-of-Life and Recycling of Lithium-Ion Battery Energy Storage Systems," that there is little opportunity to refurbish or reuse lithium-ion batteries and that recycling is preferred. Also, according to that same document, there are few battery recyclers in North America.

Staff notes that there is some uncertainty with the following aspects of the BESS and its decommissioning evaluation. First, the lifespan of the facility including the BESS is 30 years; however, some equipment may need to be augmented or replaced sooner. This raises the possibility

24. Application at Exhibit K, Table 1.

that the BESS may be decommissioned early. Second, the batteries are characterized as hazardous waste and may fall under the US EPA's universal waste regulations. The universal waste regulation framework streamlines the hazardous waste management standards for certain categories of hazardous waste, such as batteries, to encourage recycling of those waste materials. Third, Staff has found that BESS are often separately owned and independently operated from the solar facility. This ownership framework/construct occurs, because in order to recover the significant capital cost of the BESS, the owner of the BESS would need to pursue all economically profitable options.²⁵ In addition to discharging the stored electrical energy at peak demand, the BESS can also discharge at night or be used for the PJM frequency regulation. According to the Applicant, currently the BESS is expected to be owned, operated, and maintained by Marion County Solar Project, LLC. However, there is a chance that the BESS could be owned, operated, and maintained by a separate owner.

To further address these concerns, Staff recommends that at least 30 days prior to the preconstruction conference, the Applicant shall submit an updated decommissioning plan (which shall include not only solar components but also BESS components) and total decommissioning cost estimate without regard to salvage value on the public docket that includes: (a) a provision that the decommissioning financial assurance mechanism include a performance bond where the company is the principal, the insurance company is the surety, and the Ohio Power Siting Board is the obligee; (b) a timeline of up to one year for removal of the equipment; (c) a provision to monitor the site for at least one additional year to ensure successful revegetation and rehabilitation; (d) a provision where the performance bond is posted prior to the commencement of construction; (e) a provision that the performance bond is for the total decommissioning cost and excludes salvage value; (f) a provision to coordinate repair of public roads damaged or modified during the decommissioning and reclamation process; (g) a provision that the decommissioning plan be prepared by a professional engineer registered with the state board of registration for professional engineers and surveyors; (h) a provision stating that the bond shall be recalculated every five years by an engineer retained by the Applicant; (i) a provision that the BESS decommissioning cost estimate not include salvage value; and (j) a provision that the BESS decommissioning cost include a significant contingency percentage which can be lowered to ten percent if the Applicant demonstrates environmental insurance coverage has been obtained that covers hazardous waste remediation.

Wind Velocity

The Applicant has indicated that the facility would be designed and installed to withstand and minimize potential damage from high-wind occurrences. Staff has found that components of the proposed facility are generally not susceptible to damage from high winds except for tornado-force winds, because generally solar panels and racking systems have wind speed design load ratings inherent in their design. For instance, the racking and tracking systems under consideration by the Applicant are rated to withstand wind speeds from 100 to 140 miles per hour.²⁶ The racking systems under consideration include a stowing feature activated at certain wind speeds.²⁷ Stow features can tilt panels to a certain angle to reduce wind loading on the solar panels during high

25. Marion County Solar Project, LLC's August 23, 2021 Response to Fourth Data Request from Staff, Data Request #7.

26. Application at Exhibit B.

27. Application at Exhibit B, and Marion County Solar Project, LLC's August 23, 2021 Response to Fourth Data Request from Staff, Data Request #1.

wind speeds events. During the detailed engineering phase, the Applicant would minimize any potential damage from high wind velocities by contract with a licensed structural engineering firm to properly design the project support equipment at sufficient depths based on the site-specific soil conditions to preclude any adverse influence from high wind velocities. The Applicant also indicates that an Ohio registered structural engineering firm would design the structures (i.e., structural support piles) to at least a design wind speed of 100 mph and use the American Society of Civil Engineers (ASCE) code number 7-16 entitled *Minimum Design Loads and Associated Criteria for Buildings and Other Structures*.²⁸

*Roads and Bridges*²⁹

The Applicant anticipates concentrated construction traffic will be limited to State Route (SR) 4 (Marion-Bucyrus Road), County Road (CR) 162 (Marion-Williamsport Road), to SR 423 (Marion-Upper Sandusky Road). Three access points to the project site have been proposed. All are to be situated along the west side of SR 423 (Marion-Upper Sandusky Road).³⁰

The Applicant conducted a construction route study (CRS) to identify viable means of accessing the project area. The study evaluated road surface type and conditions, bridge and culvert locations and conditions, road and bridge posted load restrictions, and potential overhead clearance issues along the roads that will be used during construction of the proposed project.³¹ According to the Applicant's CRS, six bridges are located along probable transportation routes. All bridges were given a good condition assessment.³²

The road surface quality of six asphalt surfaced routes were evaluated. The CRS recommended that two routes be eliminated from consideration for construction equipment routes. CR 94 (Hillman-Ford Road) was eliminated due to the one-lane underpass, potential for flooding, and narrow roadway. Township T-219 (Barford Road) was also eliminated due to it being a narrow, residential road. The remaining four routes SR 4, CR 162, SR 423, and CR 66 (Kenton-Galion Road) were found to be in fair to good condition. Evaluation of the CR 66 indicated reflective cracking, but no potholes and should be closely monitored to verify that no further cracking or potholes form during project construction. The other routes within the study area do not appear to exhibit any underlying issues, but rather normal aging that requires routine maintenance.³³ No permanent overhead obstructions, weight, or width restrictions were identified along the proposed delivery routes. No temporary or permanent road closures, lane closures, or other road access restrictions are expected with this project. Based on the findings of the CRS, the Applicant concludes there are no significant concerns for use of the existing roads.³⁴

Impact mitigation measures for roadway infrastructure is outlined in the Applicant's CRS. Construction routes will be frequently monitored for condition changes. Road repairs may be

28. Marion County Solar Project, LLC's August 23, 2021 Response to Fourth Data Request from Staff, Data Request #9.

29. The entity responsible for maintaining roads and bridges within Ohio depends on many factors. See, e.g., ODOT, *Roadway Infrastructure Maintenance Responsibility Manual*, <https://www.transportation.ohio.gov/wps/portal/gov/odot/programs/maintenance-operations/rimr/rimr>.

30. Exhibit 1 of Exhibit J (Construction Route Study by Burns McDonnell).

31. Application at page 32.

32. Application at page 2-2 of Exhibit J (Construction Route Study by Burns McDonnell).

33. Application at page 2-3 of Exhibit J (Construction Route Study by Burns McDonnell).

34. Application at page 2-3 of Exhibit J (Construction Route Study by Burns McDonnell).

necessary both during and after the completion of the project. Condition assessment and all road maintenance will conform to a Road Use and Maintenance Agreement (RUMA) as established between the Applicant and the Marion County Engineer's Office.

All necessary traffic control for construction and operation of the proposed facility shall be in accordance with ODOT standards and specifications. A construction access permit from the County Engineer's Office will be required for each of the temporary construction access points to the project site. No special hauling permits are anticipated for the project, with the exception of an overweight permit that will be required for delivery of the transformers. There is no plan to utilize public rights-of-way for the project, however if needed, right-of-way permits will be obtained from the entity responsible for the affected roadway. All permits will be obtained at least 30 days prior to the start of construction.³⁵

The CRS found the roadways within the project area have adequate sight distance along their alignments, are in rural areas, and do not carry a high volume of traffic. Overall, the study indicates very little impact to local roads during the construction of the proposed solar facility. Minor traffic delays may occur during project construction. No considerable traffic impacts are expected during site operation.

The Applicant will work with the Marion County Engineer's Office to enter into a RUMA with the county prior to construction.³⁶ Once the transportation permitting process has been completed, Staff recommends that the Applicant develop a final transportation management plan which would include the county-required RUMA. Mitigating damages to roadways caused by the project would be detailed in agreements and permits with the appropriate regulatory authorities. Any temporary improvements would be removed unless the appropriate regulatory authority requests that they remain in place.

Noise

Noise impacts from construction activities would include site clearing, installation of mechanical and electrical equipment, and commissioning and testing of equipment. Many of the construction activities would generate significant noise levels during the 12-15 months of construction. However, the adverse impact of construction noise would be temporary and intermittent, would occur away from most residential structures, and would be limited to daytime working hours. The Applicant would use mitigation practices such as limiting construction activities to daylight hours, keeping equipment in good working condition, and establishing a complaint resolution process.

Operational noise impacts for a solar generation facility would be relatively minor and occur only during the day. Operational noise sources include inverters and tracking motors. The step-up transformer at the new substation and the inverters may operate at night but the noise impact would also be relatively minor.

The Applicant conducted an ambient noise level study in order to understand the existing noise levels near the proposed facility. Noise impacts to non-participating receptors were modeled using the proposed solar field inverter, substation transformer, battery storage inverter, and battery

35. Application at page 34.

36. Application at page 34.

storage HVAC unit models.³⁷ The model showed that operational noise impacts would be less than ambient daytime noise levels. No non-participating receptors were modeled to receive noise impacts greater than the daytime ambient noise level plus five dBA. Therefore, the project would be expected to have minimal adverse noise impacts on the adjacent community. If an inverter or transformer model different than the proposed inverter or transformer model is chosen, the Applicant would submit a noise report confirming that no non-participating receptors were modeled to receive noise impacts greater than the daytime ambient noise level plus five dBA.

Geology³⁸

Surficial/Glacial³⁹

The project area lies within the glaciated margin of the state and includes several Wisconsinan-age glacial features. Alluvial, outwash and ground moraine features are present. Alluvial deposits are located within the floodplains of the Little Scioto River and consist of silt clay to coarse sand and gravel deposits. Outwash deposits surround the alluvial floodplains and extend through much of the center of the project area. The eastern portion of the project area is made up of ground moraine deposits, featuring clayey till and flat to gently undulating terrain.⁴⁰ Glacial drift within the project area ranges from zero feet to approximately 50 feet in thickness. Drift thickness within the footprint of the project averages approximately 10 feet thinning to zero going from northwest to southeast.

37. For the sound propagation model, the model used for the solar field transformer were calculated from a 5,000 kW with a sound power level of 94 dBA, the model used for the substation transformer was a 125 MVA transformer, the model used for the battery storage inverter was a Freesun PCSK/HEMK inverter, and the model used for the battery storage HVAC units was a ducted Bard W72AA unit with low noise blower.

38. According, in part, to R.C. 1505.01, the ODNR's division of geological survey "[s]hall advise, consult, or collaborate with representatives of agencies of the state...on problems or issues of a geological nature when requested by such an agency..." One of the missions of the ODNR Division Geological Survey is "to provide geologic information and services needed for responsible management of Ohio's natural resources." (ODNR, Division of Geological Survey, About the Division, <<https://ohiodnr.gov/wps/portal/gov/odnr/discover-and-learn/safety-conservation/about-ODNR/geologic-survey/division-of-geologic-survey/division-of-geologic-survey>>). This includes studying and investigating, among other things, glacial and surficial geology, bedrock geology, and geological hazards. According to ODNR a "geologic hazard or 'geohazard' is a geologic condition, either manmade or natural, that poses a potential danger to life and property. Ohio is home to a number of potential geohazards, including karst, mine subsidence, earthquakes, landslides, and shore erosion." (ODNR, Geologic Hazards, <<https://ohiodnr.gov/wps/portal/gov/odnr/discover-and-learn/safety-conservation/about-ODNR/geologic-survey/geologic-hazards>>).

39. "Since its inception in 1837, the ODNR Division of Geological Survey has researched and mapped the state's glacial and surficial geology. Today, highly detailed mapping and meticulous studies continue to inform and broaden our knowledge of Ohio's glacial past." (ODNR, *Glacial Geology in Ohio* <<https://ohiodnr.gov/wps/portal/gov/odnr/discover-and-learn/safety-conservation/about-ODNR/geologic-survey/glacial-geology>>).

"Since collaborating with the U.S. Geological Survey to release the first statewide *Glacial Map of Ohio* in 1961, the ODNR Division of Geological Survey has mapped the unconsolidated geologic materials found at Ohio's surface with increasing detail." (ODNR, *Glacial & Surficial Geologic Maps*, <<https://ohiodnr.gov/wps/portal/gov/odnr/discover-and-learn/safety-conservation/about-ODNR/geologic-survey/glacial-geology/glacial-surficial-geologic-maps>>).

40. Application at page 13/22 of Exhibit U (U.S. Fish and Wildlife and ODNR Consultation) .

*Bedrock*⁴¹

The uppermost bedrock unit throughout the footprint of the project is the Columbus Limestone. . The unit may be dolomitic in places and frequently contains solution features.⁴² The uppermost bedrock in the western portion of the project area is the Salina Undifferentiated. Due to the glacial drift discussed above, bedrock may be exposed within the project area boundary. Special project foundation engineering design such as pre-drilling of pile foundations will likely be necessary within certain portions of the project area where shallow bedrock is present. Weathered and highly fractured bedrock may be removed by ripping, conventional excavation, or inline drilling techniques.⁴³

Karst

Conditions typically necessary for the formation of karst geology features do exist within the project area.⁴⁴ The Columbus Limestone is known to produce karst features.⁴⁵ However, the nearest documented (ODNR Geologic Survey) sinkhole feature is several miles away from the project area.⁴⁶ Although not identified within Exhibit V (Critical Issues Analysis by Ecology & Environment, Inc.), the Geotechnical Recommendation Report discussed in further detail below, indicates “the bedrock formation beneath the project site may contain constituents that are susceptible to karst formations”.

*Oil/Gas and Mining*⁴⁷

ODNR records indicate that no oil and gas activity occurs within the project footprint. One historic well is located within one mile of the project area. Records indicate this well is plugged and abandoned.⁴⁸ No Class II injection well activity occurs within several miles of the project area.

No active mining occurs within the project area.⁴⁹ The nearest mine is the J.M. Hamilton and Sons Company approximately 0.25 mile east of the project area. ODNR records show this to be an inactive surface mining quarry. No known abandoned underground mines are located within several miles of the project area.

41. “The ODNR Division of Geological Survey has had a long history of generating bedrock geologic maps for the state of Ohio since its inception in 1839. The most recent iteration of the geologic map of Ohio was created by seamlessly piecing together 788 individual 7.5-minute bedrock geologic quadrangles.” (ODNR, *Bedrock Geology*, <<https://ohiodnr.gov/wps/portal/gov/odnr/discover-and-learn/safety-conservation/about-odnr/geologic-survey/bedrock-geology/bedrock-geology>>).

42. Application at page 13/22 of Exhibit U (U.S. Fish and Wildlife and ODNR Consultation).

43. Application at page 23 of Exhibit L (Geotechnical Recommendation Report by Mott MacDonald).

44. Karst is a geologic feature formed within carbonate rocks through mineral dissolution caused by movement of water. Most common features include the formation of caves or the formation of sinkholes at the surface. Generally, karst features, and the likelihood of karst development are most prevalent in areas where the carbonate bedrock is overlain by 20 feet or less of glacial till material. Limestone and dolomite are the most common carbonate bedrock. Generally, Limestone is more prone to dissolution than dolomite.

45. Application at page 14/22 of Exhibit U (U.S. Fish and Wildlife and ODNR Consultation).

46. ODNR Karst Viewer Interactive Map https://gis.ohiodnr.gov/website/dgs/karst_interactivemap/.

47. ODNR Division of Oil & Gas states: “[t]he Division is responsible for regulating Ohio’s oil and natural gas industry and for the protection of all Ohioans and our environment while ensuring the state’s abundant natural resources are managed properly.” (ODNR, *Division of Oil & Gas*, <<https://ohiodnr.gov/wps/portal/gov/odnr/discover-and-learn/safety-conservation/about-ODNR/oil-gas/division-of-oil-and-gas/division-of-oil-and-gas>>).

48. ODNR Oil and Gas Viewer Interactive Map <https://gis.ohiodnr.gov/MapView/?config=OilGasWells>.

49. ODNR Mines Viewer Interactive Map <https://gis.ohiodnr.gov/MapView/?config=OhioMines>.

*Seismic Activity*⁵⁰

Recent geologic history shows Marion County to be at low risk for seismicity caused by earthquakes as only one earthquake has been documented in the county.⁵¹ This 1930 event epicenter occurred approximately 2.5 miles to the southwest of the project area. The next nearest documented earthquake event is 25 miles from the project area. Based on boring/coring data down to 24.5 feet below ground level (BGL) the application assigns a Class D Seismic Site Classification in accordance with Chapter 20 of the ASCE Standards 7-16 design manual.⁵²

Although bedrock will likely be a factor in portions of the project area, the Applicant has indicated that no blasting activities are anticipated for the construction or operation of the proposed solar facility.⁵³

*Soils*⁵⁴

According to the United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) Web Soil Survey, the project area consists primarily of soils derived from glacial till, alluvium and outwash deposits. Blount and Saranac are the most common soil series found within the boundaries of the project area. Together, these soils make up about 60 percent of the soil cover in the project area. There is a low to moderate risk of shrink-swell potential in these soils. Other limiting factors include ponding and seasonal saturation. Slope remains relatively flat, with no slope exceeding a 6 percent grade.⁵⁵ No highly erodible soils exist within the project area.⁵⁶

Geotechnical Report

A Geotechnical Recommendation Report prepared by Mott MacDonald discusses the geotechnical work performed to date. To further evaluate soil properties, 22 borings were advanced to a depth of eight to 24.5 feet BGL. The boring log for B-SS-2 included rock coring from 19.5 feet to 24.5 feet BGL.

The Applicant also conducted percolation testing, laboratory index soil testing and corrosion and sulfates, field electrical resistivity testing, and laboratory testing for thermal resistivity and

50. The ODNR Division of Geological Survey coordinates a 21-station network of seismograph stations throughout the state in order to continuously record earthquake activity. The Ohio Seismic Network (OhioSeis) went online in January 1999 to ensure Ohio has monitoring and coverage 24 hours a day, seven days a week by seismic stations with automatic detection, location and magnitude determination. (ODNR, The Ohio Seismic Network, <<https://ohiodnr.gov/wps/portal/gov/odnr/discover-and-learn/safety-conservation/about-ODNR/geologic-survey/division-of-geologic-survey/ohio-seis>>).

51. ODNR Earthquake Epicenters <https://gis.ohiodnr.gov/MapView/?config=Earthquakes>.

52. Application at page 18 of Exhibit L (Geotechnical Recommendation Report by Mott MacDonald).

53. Application at Page 57.

54. The United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) conducts soil surveys and provides technical assistance to private landowners. (USDA NRCS, Ohio NRCS Soils, <<https://www.nrcs.usda.gov/wps/portal/nrcs/oh/soils/>>).

“Web Soil Survey (WSS) provides soil data and information produced by the National Cooperative Soil Survey. It is operated by the USDA Natural Resources Conservation Service (NRCS) and provides access to the largest natural resource information system in the world. NRCS has soil maps and data available online for more than 95 percent of the nation’s counties and anticipates having 100 percent in the near future. The site is updated and maintained online as the single authoritative source of soil survey information. Soil surveys can be used for general farm, local, and wider area planning.” (USDA NRCS, USDA Web Soil Survey, <<https://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>>).

55. Application at page 14/22 of Exhibit U (U.S. Fish and Wildlife and ODNR Consultation).

56. Application at page 8 of Exhibit V (Critical Issues Analysis by Ecology and Environment, Inc.).

corrosion analyses. Pile load testing was conducted at 17 locations at depths ranging from six to 12 feet BGL.⁵⁷ The application indicates that additional investigations will be necessary to confirm the findings of the Geotechnical Recommendation Report prior to the final engineering design.⁵⁸ Six test pits were excavated from a range of five to 11.5 feet BGL.

The preliminary report findings indicate the soils and geology at the site are considered suitable for the foundations proposed. The report recommends an estimated California Bearing Ratio (CBR) value of 10 be used in preliminary access road design.⁵⁹

The Geotechnical Recommendation Report states: “Although no sinkholes were reported within our field investigation, the presence of surficial depressions was noted in some areas of the site and, therefore, considered a medium risk for the proposed solar development. The Mott MacDonald report notes that areas where the water runoff is directed will be at the greatest risk of sinkhole development, meaning any above ground structure located in close proximity to these areas will be at a greater risk of being affected by sinkholes.”⁶⁰

Conclusion

Staff recommends that the final detailed engineering drawings of the final project design shall account for geological features and include the identity of the registered professional engineer(s), structural engineer(s), or engineering firm(s), licensed to practice engineering in the state of Ohio who reviewed and approved the designs. Staff recommends that the Applicant provide a final geotechnical engineering report to Staff at least 30 days prior to the preconstruction conference.

Based on the data and considerations provided within the application submittal to date, and based on Staff assessment (with consideration and input from ODNR), and implementation of the recommended conditions, there appears to be no particular geological features within the project area that are incompatible with construction and operation of the proposed solar facility. However, conditions necessary for the formation of karst geology features do exist throughout the project site. The lack of documented karst features such as channels, sinkholes, or caverns within several miles of the project area suggests karst features are not expected to impact the construction and operation of the proposed project. Should karst features be discovered during construction, the Applicant’s primary mitigation effort would be avoidance measures.⁶¹ In the unlikely event karst features are found to be extensive, thereby rendering avoidance unfeasible, additional mitigation options would be evaluated by the geotechnical engineer of record at that time.

Ecological Impacts

Public and Private Water Supplies

Groundwater resources throughout the project area are plentiful, yielding up to 500 gallons per minute (GPM). The ODNR has record of 125 water wells drilled within 1-mile of the project area. The average depth of these wells is 66 feet with an average yield of 26 GPM.⁶²

57. Application at page 15 of Exhibit L (Geotechnical Recommendation Report by Mott MacDonald).

58. Application at page 11 of Exhibit L (Geotechnical Recommendation Report by Mott MacDonald).

59. Application at page 25 of Exhibit L (Geotechnical Recommendation Report by Mott MacDonald).

60. Application at page 7 of Exhibit L (Geotechnical Recommendation Report by Mott MacDonald).

61. August 23, 2021 Applicant Response to Staff’s Fourth Data Request.

62. Application at pages 14-15 of Exhibit U (U.S. Fish and Wildlife and ODNR Consultation).

Five drinking water (ground sourced) supply source water protection areas (SWPAs) occur within one mile of the project area.⁶³ A portion of the five-year time of travel boundary for Enterprise Baptist Church's (non-community water system) SWPA overlaps a small portion of the southeastern project area. In addition, the northern portion of the project area is overlapped by the corridor management zone for the Aqua Ohio – Marion (community water system) SWPA located to the southwest of the project area.⁶⁴ Both the Enterprise Baptist Church and Aqua Ohio – Marion SWPAs are categorized by the Ohio EPA as highly susceptible to contamination.⁶⁵ The Applicant does not anticipate construction or operation of the proposed solar facility will impact groundwater. Solar facilities are not a “regulated activity” per Ohio EPA standards established for SWPAs.⁶⁶

The Applicant has indicated two private water wells exist within the project area. The Ohio Department of Health regulations establish setbacks from potential contaminant sources to potable water supplies. Although solar facilities are an unlikely potential source of contamination, the 50-foot “setback” or isolation radius from potable water supply wells as established by Ohio Adm.Code 3701-28-7(F) should be followed. For non-potable wells, and primarily for access purposes, a minimum setback of 10 feet should be observed. Both setbacks will require the Applicant to “ground-truth” all water well locations within or immediately adjacent to the project area.

Conclusion

Staff recommends that the final detailed engineering drawings of the final project design shall account for and accommodate the setbacks discussed above.

Based on the data and considerations provided within the application submittal to date, including implementation of a Spill Prevention, Control, and Countermeasure Plan, and based on Staff assessment and implementation of the recommended conditions, there appears to be no unreasonable risk posed to public and private drinking water supplies.

In consultation with Ohio EPA drinking water staff, communication between the Applicant and SWPA owners/operator(s) is strongly recommended. This communication helps ensure the SWPA owner/operator(s) are informed thereby allowing these parties to take steps it may deem necessary (e.g., drinking water advisories) in the event of a spill or significant panel damage. Staff recommends that at least 30 days prior to the preconstruction conference, the Applicant submit its final emergency response plan. This plan shall include provision(s) to keep the City of Marion, Aqua Ohio – Marion, and Enterprise Baptist Church informed of the status of any spills, significant panel damage, and associated repair/remediation schedule.

63. Application at page 55.

64. Figure 1 of the April 20, 2021 Response to the First Staff Data Request depicts source water protection areas and the corridor management zone boundaries. Ohio EPA defines the corridor management zone as: “The surface and subsurface area within a source water assessment area where the potential for drinking water contamination warrants delineation, inventory, and management.” (see factsheet cited below).

65. Ohio EPA Source Water Protection Areas Interactive Map.
<https://oea.maps.arcgis.com/apps/webappviewer/index.html?id=3b39e11ba7fc43c3b41801e3580e6d21>

66. Ohio EPA Requirements for Siting and Setbacks from SWPAs.
https://www.epa.state.oh.us/portals/28/documents/swap/SWAP_Rules.pdf.

Surface Waters

The Applicant's consultant Stantec delineated three streams within the project area, including two perennial streams, one intermittent stream. Four wetlands were also delineated within the project area, totaling approximately 3.62 acres.⁶⁷ Including one category 1 wetland and three category 2 wetlands.

The Applicant plans to avoid all delineated wetlands and streams and no in water work is proposed for the project. At the time of the application no installation of collection lines is proposed to cross streams or wetlands. The Applicant states that if the installation of collection lines become necessary to cross streams or wetlands it would be done via Horizontal Directional Drilling (HDD). The HDD process includes the risk of a frac-out. A frac-out occurs when the drilling lubricant, typically water or a non-toxic, fine clay bentonite slurry, is forced through cracks in bedrock and/or surface soils. The Applicant has prepared a Frac Out Contingency Plan as part of the application that would be implemented at any stream or wetland crossings. Further specifics about how surface waters would be protected from indirect construction stormwater impacts would be outlined in the Applicant's SWPPP. The Applicant would obtain an Ohio National Pollutant Discharge Elimination System (NPDES) construction stormwater general permit through the Ohio EPA prior to the start of construction. Staff does not anticipate issues with the Applicant's procurement of this permit. Staff recommends the Applicant apply Ohio EPA published Guidance on Post -Construction Storm Water Control for Solar Panel Arrays to project construction and operation.

A portion of approximately 33.7 acres of the project area overlaps with the FEMA-designated 100-year floodplain. The applicant would coordinate with the Marion County Sanitary Engineer to obtain floodplain permitting prior to construction. Major project infrastructure has been sited to avoid floodplain areas as to avoid a change in drainage or increase upstream and downstream impacts.

Threatened and Endangered Species⁶⁸

The Applicant requested information from the ODNR and the USFWS regarding state and federal listed threatened or endangered plant and animal species. Staff gathered additional information

67. Wetlands falling within the purview of the Clean Water Act are regulated within Ohio by R.C. 6111, et seq. and Ohio Adm.Code 3745-1-50, et seq. Ohio Adm.Code 3745-1-54 establishes wetland categories.

68. Based on agency coordination with the USFWS and ODNR, identified species of concern are, in general, defined as those species that are protected under the federal Endangered Species Act of 1973, as amended (16 U.S.C. §§ 1531-1544) and/or according to the Conservation of Natural Resources within R.C. 1518.01-1518.99; 1531.25; and 1531.99. *See also e.g.*, R.C. 1531.08 states, in part: "In conformity with Section 36 of Article II, Ohio Constitution, providing for the passage of laws for the conservation of the natural resources of the state, including streams, lakes, submerged lands, and swamplands, and in conformity with this chapter and Chapter 1533. of the Revised Code, the chief of the division of wildlife has authority and control in all matters pertaining to the protection, preservation, propagation, possession, and management of wild animals and may adopt rules under section 1531.10 of the Revised Code for the management of wild animals."

One of the missions of the ODNR is to "conserve and improve the fish and wildlife resources and their habitats and promote their use and appreciation by the public so that these resources continue to enhance the quality of life for all Ohioans." In carrying out this mission, the ODNR considers the "status of native wildlife species [to be] very important" and therefore lists wildlife species needing protection. (ODNR, *State Listed Species*,

through field assessments and review of published ecological information. The following table provides the results of the information requests, field assessments, and document review.

MAMMALS				
Common Name	Scientific Name	Federal Status	State Status	Presence in Project Area
Indiana bat	<i>Myotis sodalis</i>	Endangered	Endangered	No suitable winter hibernacula were observed in the Project area. Summer foraging and roosting habitat was observed in the project area.
Northern Long-Eared bat	<i>Myotis septentrionalis</i>	Threatened	Endangered	No suitable winter hibernacula were observed in the Project area. Summer foraging and roosting habitat was observed in the project area.
Little Brown bat	<i>Myotis lucifugus</i>	N/A	Endangered	No suitable winter hibernacula were observed in the Project area. Summer foraging and roosting habitat was observed in the project area.
Tri-colored bat	<i>Perimyotis subflavus</i>	N/A	Endangered	No suitable winter hibernacula were observed in the Project area. Summer foraging and roosting habitat was observed in the project area.
American Badger	<i>Taxidea taxus</i>	N/A	Species of Concern	Potentially suitable habitat was observed within the project area. Impacts not expected.
BIRDS				
Common Name	Scientific Name	Federal Status	State Status	Presence in Project Area
Northern Harrier	<i>Circus hudsonius</i>	N/A	Endangered	Potentially suitable winter habitat and nesting habitat was observed within the Project area.

<https://ohiodnr.gov/wps/portal/gov/odnr/discover-and-learn/safety-conservation/about-ODNR/wildlife/state-listed-species>).

In addition to endangered species, those species classified as “threatened” are considered during OPSB project planning and approval because these species are those “whose survival in Ohio is not in immediate jeopardy, but to which a threat exists. Continued or increased stress will result in its becoming endangered.” *Id.*

BIRDS				
American bittern	<i>Botaurus lentiginosus</i>	N/A	Endangered	Potentially suitable habitat was observed within the Project area
Black-Crowned Night-heron	<i>Nycticorax nycticorax</i>	N/A	Threatened	Potentially suitable habitat was observed within the Project area.
King Rail	<i>Rallus elegans</i>	N/A	Endangered	Potentially suitable habitat was observed within the Project area.
Least Bittern	<i>Ixobrychus exilis</i>	N/A	Threatened	Potentially suitable habitat was observed within the Project area.
Sandhill Crane	<i>Cygnus buccinator</i>	N/A	Threatened	No suitable habitat was observed within the Project area.
Trumpeter Swan	<i>Cygnus buccinator</i>	N/A	Threatened	No suitable habitat was observed within the Project area.
Upland Sandpiper	<i>Bartramia longicauda</i>	N/A	Endangered	Potentially suitable migration habitat and nesting habitat was observed within the Project area.

INVERTEBRATES				
Common Name	Scientific Name	Federal Status	State Status	Presence in Project Area
Snuffbox	<i>Epioblasma triquetra</i>	Endangered	Endangered	No suitable habitat present and no in-water work proposed
Clubshell	<i>Pleurobema clava</i>	Endangered	Endangered	No suitable habitat present and no in-water work proposed.
Rabbitsfoot	<i>Quadrula cylindrica cylindrica</i>	Threatened	Endangered	No suitable habitat present and no in-water work proposed.
Rayed Bean	<i>Villosa fabalis</i>	Endangered	Endangered	No suitable habitat present and no in-water work proposed.
Pondhorn	<i>Uniomereus tetralasmus</i>	N/A	Threatened	No suitable habitat present and no in-water work proposed.

REPTILES				
Common Name	Scientific Name	Federal Status	State Status	Presence in Project Area
Eastern Massasauga	<i>Sistrurus catenatus</i>	Threatened	Endangered	Due to the location, the type of habitat within the project area, this project this species is not likely to be present.

The Applicant did not identify any listed plant or animal species during field surveys. The ODNr and the USFWS did not identify any concerns regarding impacts to listed plant or animal species.

In the event that the Applicant encounters listed plant or animal species during construction, Staff recommends that the Applicant contact Staff, the ODNR, and the USFWS, as applicable. Staff also recommends that if the Applicant encounters any listed plant or animal species prior to construction, the Applicant include the location and how impacts would be avoided in mapping based on final engineering drawings to be provided to Staff prior to the preconstruction conference.

The project area is within the range of state and federally endangered Indiana bat (*Myotis sodalis*), the state and federally threatened northern long-eared bat (*Myotis septentrionalis*), the state endangered Little Brown bat (*Myotis lucifugus*), and the state endangered Tricolored bat (*Perimyotis subflavus*). No tree clearing is proposed for the project. As tree roosting species in the summer months, the habitat of these species is not expected to be impacted by the project. In the event that tree clearing becomes necessary for this project, Staff recommends the Applicant adhere to ODNR and USFWS recommended seasonal tree cutting dates of October 1 through March 31 for all trees three inches or greater in diameter, unless coordination efforts with the ODNR and the USFWS reflects a different course of action. The Applicant has committed to in the event of necessary project tree clearing that clearing of any trees would occur within these recommended dates.

The project is within the range of several listed bird species such as the state endangered Northern Harrier (*Circus hudsonius*), state endangered American Bittern (*Botaurus lentiginosus*), state threatened black-crowned night-heron (*Nycticorax nycticorax*), state endangered king rail (*Rallus elegans*), state threatened least bittern (*Ixobrychus exilis*), and state endangered Upland Sandpiper (*Bartramia longicauda*). All of these species were recognized by the ODNR and the USFWS as having suitable habitat within the project area. However, the Applicant has sited project infrastructure to avoid the nesting habitat (i.e., wetlands and grasslands) for these listed bird species. Winter habitat would be impacted (i.e., croplands), however, due to the highly mobile nature of these species and the availability of wintering habitat in the area, impacts to these species is not anticipated.

The project is within the range of several invertebrate mussel species such as the state and federally endangered Snuffbox (*Epioblasma triquetra*), state and federally endangered Clubshell (*Pleurobema clava*), state endangered and federally threatened Rabbitsfoot (*Quadrula cylindrica cylindrica*), and the state and federally endangered Rayed Bean (*Villosa fabalis*). However, quality suitable habitat for these species was not observed within the project area, and furthermore, no in water work is proposed and impacts to these species is not anticipated.

The project is within the range of the Eastern Massasauga (*Sistrurus catenatus*), a state endangered and federally threatened snake species. This species prefers wet habitats in fall, winter, and spring, and drier grassland and deciduous forest in the summer. However, the Applicant has sited project infrastructure to avoid these habitats (i.e., wetlands, grasslands, forest). Impacts to this species is not anticipated.

If the Applicant encounters any new listed plant or animal species or suitable habitat of these species prior to construction, the Applicant shall include the location in the final engineering drawings and associated mapping. The Applicant shall avoid impacts to these species and explain how impacts would be avoided during construction.

Vegetation

The following table reflects the different vegetative communities present in the project area and associated impact for the facility.

VEGETATIVE COMMUNITIES WITHIN PROJECT AREA	
Vegetation Community Type	Total (Acres)
Upland Forest	17
Wetland	3.6
Grassland/Open Land	73.1
Cultivated Crop	865.7
Total	959.4

The estimated vegetative impact includes the entire project area presented within the application. However, the entire project area would not be developed as part of this project. As a result, permanent impacts associated with this project would be less than the amount shown. Permanent vegetative impacts would occur primarily within agricultural lands. All infrastructure has been sited to avoid the approximate 17 acres of upland forest and no disturbance to forested habitat would occur.

The Applicant has developed a vegetation management plan in which it committed to incorporate pollinator-friendly habitat in accordance with the recommendations of the Ohio Pollinator Habitat Initiative. This habitat would enhance the visual appeal of the project, enrich local wildlife habitat, benefit the local farming community, increase plant diversity, and discourage invasive species. This vegetation would be incorporated under and between the panels and in the open areas of the project. This project would be expected to represent a reduced environmental impact when compared to the current land use of agricultural plant production. This is due to the reduction of frequent tilling leading to erosion and sedimentation, and reduced fertilizer and pesticide application. To further assure that these benefits would be realized, Staff recommends that the Applicant take steps to prevent establishment and/or further propagation of noxious weeds identified in Ohio Adm.Code Chapter 901:5-37 during implementation of any pollinator-friendly plantings.

Recommended Findings

Staff recommends that the Board find that the Applicant has determined the nature of the probable environmental impact for the proposed facility, and therefore complies with the requirements specified in R.C. 4906.10(A)(2), provided that any certificate issued by the Board for the proposed facility include the conditions specified in the section of this *Staff Report of Investigation* entitled Recommended Conditions of Certificate.

Considerations for R.C. 4906.10(A)(3)

MINIMUM ADVERSE ENVIRONMENTAL IMPACT

Pursuant to R.C. 4906.10(A)(3), the proposed facility must represent the minimum adverse environmental impact, considering the state of available technology and the nature and economics of the various alternatives, along with other pertinent considerations.

Site Selection

The Applicant's site selection process focused on the following criteria: proximity to available transmission capacity, landowner and community interest, economic analysis, and further evaluations of present site conditions. In preparation of the application, the Applicant engaged local officials and the public. Local governmental guidance and public input have been incorporated into the project design where feasible.

Minimizing Impacts

The OHPO issued the Applicant a concurrence letter dated July 16, 2021 regarding the potential for impacts to archaeological sites from this project and agrees that the 80 sites discovered during field investigation are ineligible for listing in the NRHP and that no additional archaeological investigation is needed. At the time of this report, the OHPO was reviewing final architectural survey work analysis. With the implementation of the commitments for protecting and avoiding cultural resources per Staff's condition, Staff has determined that minimal adverse impacts to cultural resources would be achieved.

The proposed facility would have an overall positive impact on the state and local economy due to the increase in construction spending, wages, purchasing of goods and services, annual lease payments to the local landowners, increased tax revenues and potential PILOT revenue.

The geology of the project site in Marion County does not present conditions that would limit or negatively impact the construction and future operation of the proposed facility. Staff recommends that the final detailed engineering drawings of the final project design shall account for geological features.

No significant impacts are proposed to stream or wetlands. Impacts to any state or federal listed species can be avoided by following seasonal restrictions for construction in certain habitat types, as detailed by the USFWS and the ODNR. The Applicant did not identify any listed plant or animal species during field surveys. While the project is within the range of several endangered species, impacts would be avoided to suitable habitats.

Noise impacts are expected to be limited to construction activities. The adverse impact of construction noise would be temporary and intermittent and would occur away from most residential structures. Staff recommends that the Applicant limit the hours of construction to address potential construction-related concerns from any nearby residents. No non-participating receptors were modeled to receive noise impacts greater than the daytime ambient noise level. If the Applicant changes inverter or transformer models, Staff recommends that the Applicant submit an updated noise study. The updated noise study would confirm that sound levels would not exceed the daytime ambient level plus five dBA at any non-participating sensitive receptor to assure that operation noise impacts are minimal. Further, the Applicant has developed a complaint resolution plan which would be implemented throughout construction and operation.

During the construction period, local, state, and county roads would experience a temporary increase in truck traffic due to deliveries of equipment and materials. Due to the location of the project, the Applicant anticipates that most components for the entire project would be delivered by using flatbed or tractor-trailer vehicles and multi-axle dump trucks. The transportation management plan would be finalized once the engineering layout is determined. A final delivery route plan would be developed through discussions with local officials. The Applicant intends to enter into a road use agreement with the county engineer.

Due to the low profile of the project, combined with existing vegetation in the area, the visual impacts would be most prominent to landowners in the immediate vicinity of the infrastructure itself. In order to reduce impacts in areas where an adjacent, non-participating parcel contains a residence with a direct line of sight to the project, Staff has recommended a condition requiring a final landscape and lighting plan that addresses the potential impacts of the facility. Staff also recommends that the Applicant adjust its landscape and lighting plan to address potential impacts to the traveling public, nearby communities, and recreationalists. In addition, Staff recommends a perimeter fencing condition to further minimize overall aesthetic concerns and to provide more wildlife friendly access for small animals.

The Applicant has committed to take steps in order to address potential impacts to farmland, including repairing all drainage tiles damaged during construction and restoring temporarily impacted land to its original use. The Applicant has consulted landowners and county records to determine the locations of drain tile mains. In order to avoid impacts to drain tiles, the Applicant stated that it would locate drain tiles as accurately as possible prior to construction. The Applicant has committed to promptly repair any drain tile found to be damaged by the project during the operational life of the project. Following decommissioning of the facility, land can be restored for agricultural use.

The Applicant has prepared a decommissioning plan to decommission the solar facility. The Applicant would provide for financial security to ensure that funds are available for decommissioning and land-restoration. The Applicant would restore the land significantly to its original topography to allow for resumption of agricultural use. Staff has recommended a condition requiring that the draft decommissioning plan be updated to include improved financial assurance and a decommissioning cost estimate, among other things.

The Applicant has committed to use panels that have been certified to comply with the US EPA's Toxicity Characteristic Leaching Procedure test and meet the U.S. EPA definition of non-hazardous waste.

Conclusion

Staff concludes that the proposed project would result in both temporary and permanent impacts to the project and surrounding areas. The project is unlikely to pose a significant adverse impact to existing land use, cultural resources, recreational resources, or wildlife. With Staff's recommended conditions to further mitigate potential impacts, Staff concludes that the project represents the minimum adverse environmental impact.

Recommended Findings

Staff recommends that the Board find that the proposed facility represents the minimum adverse environmental impact, and therefore complies with the requirements specified in R.C.

4906.10(A)(3), provided that any certificate issued by the Board for the proposed facility include the conditions specified in the section of this *Staff Report of Investigation* entitled Recommended Conditions of Certificate.

CONSIDERATIONS FOR R.C. 4906.10(A)(4)

ELECTRIC GRID

Pursuant to R.C. 4906.10(A)(4), the Board must determine that the proposed electric facilities are consistent with regional plans for expansion of the electric power grid of the electric systems serving this state and interconnected utility systems, and that the facilities will serve the interests of electric system economy and reliability. The purpose of this section of the report is to evaluate the impact of integrating the proposed facility into the bulk power system (BPS).

The Applicant proposes to construct a solar-powered electric generation facility, capable of producing 100 MW. The project will connect to the regional transmission grid through a gen-tie line into a 138 kV three-ring bus switchyard to be constructed at the project site, then with the ATSI transmission system along the existing Galion-Roberts South 138 kV circuit. The switchyard will be owned and operated by ATSI. The facility will include a BESS of 20.3 MW using energy produced by the solar panels.

NERC Planning Criteria

The North American Electric Reliability Corporation (NERC) is responsible for the development and enforcement of the federal government's approved reliability standards, which are applicable to all owners, operators, and users of the BPS. As an owner, operator, and/or user of the BPS, the Applicant is subject to compliance with various NERC reliability standards. The NERC reliability standards are included as part of the system evaluations conducted by PJM Interconnection, LLC (PJM).⁶⁹

PJM Interconnection

The Applicant submitted two generation interconnection requests for the proposed facility to PJM. For the initial request of March 2017, PJM has assigned the queue ID AC2-195 under the name "Galion-Roberts South 138 kV," which requested an injection of 100 MW. The second request of March 2019 was assigned queue ID AE2-324, also under the name of "Galion-Roberts South 138 kV" and requested an increase of 20.3 MW. PJM has completed and issued the Feasibility Study reports for AC2-195 and AE2-324 in July 2017 and July 2019, respectively.⁷⁰ PJM has completed and issued the System Impact Study reports (SIS) for AC2-195 and AE2-324 in June 2020 and February 2020, respectively.⁷¹

The Table below shows the queue positions assigned to the Applicant by PJM.

69 . PJM Interconnection, LLC is the regional transmission organization charged with planning for upgrades and administrating the generation queue for the regional transmission system in Ohio. Generators wanting to interconnect to the bulk electric transmission system located in the PJM control area are required to submit an interconnection application for review of system impacts. The interconnection process provides for the construction of expansions and upgrades of the PJM transmission system, as needed to maintain compliance with reliability standards with the addition of generation in its footprint.

70. PJM Interconnection, "New Services Queue", Feasibility Study for Queue IDs: AC2-195 and AE2-324, accessed March 8, 2021, <https://www.pjm.com/planning/services-requests/interconnection-queues.aspx>.

71. PJM Interconnection, "New Services Queue", System Impact Study for Queue IDs: AC2-195 and AE2-324, <https://www.pjm.com/planning/services-requests/interconnection-queues.aspx> (Accessed March 8, 2021).

PJM QUEUES: MARION COUNTY SOLAR FARM PROJECT

Queue ID	Queue Date	Power Output (MW)	Capacity (MW)
AC2-195	3/30/2017	100	62.1
AE2-324	3/30/2019	20.3	20.3
Totals		120.3	82.4

PJM studied the interconnection as an injection into the BPS via the ATSI Galion-Roberts South 138 kV transmission line. The Applicant requested a total injection of 120.3 MW, of which 82.4 MW could be available in the PJM capacity market. The capacity market ensures that there is an adequate availability of generation resources that can meet current and future demand.

PJM Network Impacts

PJM analyzed the proposed facility interconnected to the BPS. The 2020 summer peak power flow model was used by PJM to evaluate regional reliability impacts for queue project AC2-195 as a 100 MW injection into the ATSI area with a commercial probability of 100 percent. The project was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Operators). The studies revealed two lines that may overload, and the Applicant has indicated that the corrective actions in the manner of network upgrades identified in the PJM Facility would be incorporated.⁷² The chart below displays the results of the PJM SIS for the regional footprint.⁷³ PJM identified no problems associated with queue project AE2-324, the BESS.

**PJM REGIONAL SYSTEM IMPACTS
(2020 Summer Peak)**

Generation Deliverability – System Normal & Single Contingency Outage	
Plant Output: Capacity Level – 82.4 MW	No Problems Identified.
Category C and D – Multiple Contingency Outages	
Plant Output: Power Level – 120.3 MW	Two different 138 kV lines may Overload. ⁷⁴

New System Reinforcements

PJM requires mitigation of contingencies that cause reliability violations which are initially caused by the addition of the Applicant's project. There were no New System Reinforcements identified by PJM for either queue AC2-195 or AE2-324.

72. PJM Interconnection, "New Services Queue", System Impact Study for Queue ID: AC2-195, <https://www.pjm.com/planning/services-requests/interconnection-queues.aspx> (Accessed March 8, 2021).

73. PJM Interconnection, "New Services Queue", System Impact Study for queue IDs: AC2-195 and AE2-324, <https://www.pjm.com/planning/services-requests/interconnection-queues.aspx> (Accessed March 8, 2021).

74. The 02DUALR+-02ROBERT 138 kV line from bus 238667 to bus 239073 and the AB2-131 TAP-02GALION 138 kV line from bus 924790 to bus 238746. Page 10/34 of the PJM System Impact Study Report for Queue position AC2-195.

Contribution to Previously Identified Overloads – Network Impacts

PJM studied the project for possible overloading where the proposed facility may affect earlier generation or transmission projects in the PJM queue. None were identified for either queue.

Potential Congestion due to Local Energy Deliverability

PJM also studied the delivery of the energy portion of this interconnection request. Problems identified here would likely result in operational restrictions for the project. Network upgrades under this section would allow for the delivery of energy with operational restrictions. The studies revealed two lines that may overload, and these were identified previously in the table above.⁷⁵

Short Circuit Analysis

The short circuit analysis, which is part of the SIS, evaluates the interrupting capabilities of circuit breakers that would be impacted by the proposed generation addition. PJM performed a short circuit analysis, and no additional problems were identified.

Recommended Findings

Staff recommends that the Board find that the proposed facility is consistent with regional plans for expansion of the electric power grid of the electric systems serving this state and interconnected utility systems, and that the facility would serve the interests of electric system economy and reliability. Therefore, Staff recommends that the Board find that the facility complies with the requirements specified in R.C. 4906.10(A)(4), provided that any certificate issued by the Board for the proposed facility include the conditions specified in the section of this *Staff Report of Investigation* entitled Recommended Conditions of Certificate.

75. The 02DUALR+-02ROBERT 138 kV line from bus 238667 to bus 239073 and the AB2-131 TAP-02GALION 138 kV line from bus 924790 to bus 238746. Page 10/34 of the PJM System Impact Study Report for Queue position AC2-195.

Considerations for R.C. 4906.10(A)(5)

AIR, WATER, SOLID WASTE AND AVIATION

Pursuant to R.C. 4906.10(A)(5), the facility must comply with Ohio law regarding air and water pollution control, withdrawal of waters of the state, solid and hazardous wastes, and air navigation.

Air⁷⁶

Air quality permits are not required for construction or operation of the proposed facility. However, fugitive dust rules adopted under R.C. Chapter 3704 may be applicable to the construction of the proposed facility. The Applicant would control temporary and localized fugitive dust by using best management practices (BMPs) such as using a dust suppressant such as water to wet soil to minimize dust during periods of high heat. These practices are outlined in the ODNR's *Ohio Rainwater and Land Development Manual*. This method of dust control is typically used to comply with fugitive dust rules.

This project would not include any stationary sources of air emissions and, therefore, would not require air pollution control equipment.

Water⁷⁷

The Applicant anticipates obtaining environmental permits, if necessary. The Applicant would mitigate potential water quality impacts associated with aquatic discharges by obtaining NPDES construction storm water general permit (OHC000005) coverage from the Ohio EPA with submittal of a notice of intent and development and implementation of a SWPPP. The SWPPP would describe and outline BMPs to control soil erosion, minimize sedimentation, and outline placement of silt fence and compost filter sock where appropriate to minimize runoff.

The Applicant would obtain, if required, the following permits:

- The U.S. Army Corps of Engineers Section 404 or nationwide permit for stream crossings and wetland impacts.

76. The Revised Code provides for the Ohio EPA to administer and enforce the provisions of R.C. Ch. 3704 with regards to air pollution control. See e.g., RC 3704.03, 3704.161. The Ohio EPA Division of Air Pollution Control ensures compliance with the federal Clean Air Act and the Emergency Planning and Community Right-to-Know Act as part of its mission to attain and maintain air quality at a level that protects the environment and public health. (Ohio EPA, *Division of Air Pollution Control*, <https://www.epa.ohio.gov/dapc/#188913097-featured-topics>). The Division of Air Pollution Control develops and enforces rules in the Ohio Administrative Code, which assist the state of Ohio to: attain and maintain the National Ambient Air Quality Standards (NAAQS) contained in the Clean Air Act; fulfill the requirements set forth by the Ohio General Assembly in R.C. 3704; and protect and maintain healthy air quality for the citizens of the state of Ohio. (See, Ohio EPA, *Division of Air Pollution Control Rules and Laws*, <<https://www.epa.ohio.gov/dapc/DAPCrules>>).

77. The Revised Code provides for the Ohio EPA to be the lead agency in administering the provisions of Ch. 6111 with regards to water quality. See e.g., RC 6111.041. For example, the Ohio EPA, among other things, “ensures compliance with the federal Clean Water Act and works to restore and enhance the integrity of Ohio’s waters.” (Ohio EPA Website, *Division of Surface Water*, <https://www.epa.ohio.gov/dsw/Surface-Water/LiveTabId/113292#:~:text=Ensures%20compliance%20with%20the%20federal,the%20integrity%20of%20Ohio's%20waters.&text=We%20issue%20permits%20to%20regulate,aimed%20at%20improving%20polluted%20streams>). The Clean Water Act establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. (US EPA, *Summary of Clean Water Act*, <https://www.epa.gov/laws-regulations/summary-clean-water-act>).

- Ohio EPA Water Quality Certification under Section 401 of the Clean Water Act.
- Ohio Isolated Wetland Permit in accordance with R.C. 6111.03(J) and R.C. 6111.021.

The Applicant would develop a Spill Prevention, Control, and Countermeasure plan to manage the storage and mitigate the unlikely release of hazardous substances.

With these measures, construction and operation of this facility would comply with requirements of R.C. Chapter 6111, and the rules and laws adopted under that chapter.

Solid Waste⁷⁸

Debris generated from construction activities would include items such as plastic, wood, cardboard, metal packing/packaging materials, construction scrap, and general refuse. The Applicant estimated that the construction activities would generate approximately 4,800 cubic yards of debris and solid waste. The Applicant stated that all construction-related debris would be disposed of at an authorized solid waste disposal facility.

During operation of the project, the Applicant anticipates that the O&M building would generate solid waste comparable in type and quantity to a small business office; it would use a local solid waste disposal and recycling service to handle the waste.

The Applicant's solid waste disposal plans would comply with solid waste disposal requirements set forth in R.C. Chapter 3734.

Aviation⁸

The height of the tallest above ground structures would be the gen-tie transmission line poles or substation support structures which would be approximately 110 feet tall.⁷⁹ Those heights are under the height requirement from the Federal Aviation Administration (FAA), pursuant to 14 CFR Part 77.9(a), for filing a Form 7460-1.

According to the Applicant, the closest public use airport is the Marion Municipal Airport which is located approximately three miles east of the project area.⁸⁰ The Applicant also found that the nearest private use heliports belong to the Marion County Sheriff's Office (1.5 miles east of the project area) and Marion General Hospital (about three miles south of the project area); these can be identified in Figure 7-1 of the Application. An aircraft would need to obtain permission prior to landing at these private-use facilities.

Additionally, the Applicant performed an analysis of the potential impact of the proposed solar facility to the operation of Marion Municipal Airport's VHF Omni-directional radio range (VOR) electronic navigation system. The Applicant found that the elevation of the solar facility would be well below the VOR navigation system elevation and therefore would not affect its operation.⁸¹

78. The Revised Code generally provides for Ohio EPA to administer and enforce the provisions of Chapters 3714. and 3734., in particular with regard to solid waste facilities, infectious waste treatment facilities and construction and demolition debris facilities.

79. Application at pages 7 and 14; Marion County Solar Project, LLC's Response to First Data Request from Staff, Data Request #14.

80. Application at page 47.

81. Application at Exhibit P.

In accordance with R.C. 4906.10(A)(5), Staff contacted the ODOT Office of Aviation during the review of this application in order to coordinate review of potential impacts of the facility on local airports.⁸² As of the date of this filing, no such concerns have been identified.

Recommended Findings

Staff recommends that the Board find that the proposed facility complies with the requirements specified in R.C. 4906.10(A)(5), provided that any certificate issued by the Board for the proposed facility include the conditions specified in the section of this *Staff Report of Investigation* entitled Recommended Conditions of Certificate.

82. R.C. 4906.10(A)(5) states: “[i]n determining whether the facility will comply with all rules and standards adopted under section 4561.32 of the Revised Code, the board shall consult with the office of aviation of the division of multi-modal planning and programs of the department of transportation under section 4561.341 of the Revised Code.” R.C. 4561.341 states: “[p]ursuant to any consultation with the power siting board regarding an application for certification under section 4906.03 or 4906.10 of the Revised Code, the office of aviation of the division of multi-modal planning and programs of the department of transportation shall review the application to determine whether the facility constitutes or will constitute an obstruction to air navigation based upon the rules adopted under section 4561.32 of the Revised Code. Upon review of the application, if the office determines that the facility constitutes or will constitute an obstruction to air navigation, it shall provide, in writing, this determination and either the terms, conditions, and modifications that are necessary for the applicant to eliminate the obstruction or a statement that compliance with the obstruction standards may be waived, to the power siting board under section 4906.03 or 4906.10 of the Revised Code, as appropriate.”

Considerations for R.C. 4906.10(A)(6)

PUBLIC INTEREST, CONVENIENCE, AND NECESSITY

Pursuant to R.C. 4906.10(A)(6), the Board must determine that the facility will serve the public interest, convenience, and necessity.

Safety

The Applicant stated that it would use reliable and certified equipment compliant with applicable Underwriters Laboratories, Institute of Electrical and Electronics Engineers, National Electrical Code, National Electrical Safety Code (NESC), and American National Standards Institute standards.

The Applicant intends to use warning signs, fencing, and gates to restrict access to the potential hazards within the solar project area. Additionally, the Applicant intends to design its facility with setbacks to non-participating residences, non-participating property lines, and public roads. The Applicant would ensure that the solar facility equipment is setback a minimum of 300 feet from the solar equipment to adjacent non-participating residential structures, at least 50 feet from the solar equipment to non-participating property lines, at least 50 feet from the solar equipment to the centerline of public roads, at least 50 feet from solar equipment to electric transmission lines, and at least 25 feet from solar equipment to wetlands or streams.⁸³ Staff and the Applicant note that the current solar facility design layout has a 225 feet setback from solar equipment to adjacent non-participating residential structures which will be increased to 300 feet in the final design.

The Applicant stated that it intends to restrict public access to the facility by enclosing the project area with fencing that complies with NESC requirements. The Applicant proposes a seven-foot-high fence with lockable gates around the project and the substation and laydown yard would have a chain link fence (i.e., either a six feet tall chain link fence topped with one foot of barbed wire strand or seven-foot-tall chain link fence).⁸⁴ Staff has recommended that, except for the substation fencing, the solar panel perimeter fence type be both wildlife permeable and aesthetically fitting for a rural location.

Prior to construction, the Applicant also intends to develop and implement a site-specific emergency action plan to identify preventive measures to reduce emergency occurrences and actions to address medical emergencies, fires, or spills. Additionally, the Applicant has indicated that as part of its emergency response plan and training, local responders would be equipped to respond to any BESS malfunctions that may arise during operation of the solar generating facility project. This plan would be submitted to OPSB prior to construction after finalized and refined with further consultation with potentially affected local and regional emergency response personnel, specifically Marion County and Marion township emergency response providers.⁸⁵ Staff recommends that the Applicant submit the finalized plans to the Board staff prior to construction. Specifically, Staff recommends that at least 30 days prior to the preconstruction

83. Marion County Solar Project, LLC's Response to First Data Request from Staff, Data Requests #10 and #11.

84. Application at page 49.

85. Application at page 49 and Marion County Solar Project, LLC's August 23, 2021 Response to Fourth Data Request from Staff, Data Requests #6, #12, and #13.

conference, the Applicant provide Staff, for review and acceptance, the emergency response plan(s) to be used during construction and operation of the facility.

Electromagnetic Fields

Electric transmission lines, when energized, generate electromagnetic fields (EMF). Laboratory studies have failed to establish a strong correlation between exposure to EMF and effects on human health. There have been concerns, however, that EMF may have impacts on human health. The gen-tie transmission line is not within 100 feet of an occupied structure, therefore calculation of the production of EMF during operation of the proposed gen-tie transmission line is not warranted per Ohio Adm.Code 4906-5-07(A)(2).⁸⁶ The Applicant indicates that the substation/switchyard complex facilities and solar equipment would conform, be designed, or compliant, and installed according to the applicable requirements of the NESC.

Public Interaction and Participation

The Applicant hosted a virtual public informational meeting for the project. Attendees were provided the opportunity to listen to a presentation about the project, ask questions, and provide comments. A list of questions received during the public informational meeting can be found in the application.⁸⁷ The Applicant also maintains a website with information about the project.⁸⁸

The Applicant has drafted a complaint resolution plan to handle complaints during the construction and operation of the facility. Staff recommends that a final version of this plan be filed on the docket no later than 30 days prior to the start of construction. The Applicant has committed to notify, by mail, affected property owners and tenants, at least seven days prior to the start of construction. Staff recommends mailing this notification to additional recipients including all those who were provided notice of the public informational meeting and OPSB hearings, local officials who received a copy of the application, residences located within one mile of the certificated project area, and any other person who has requested updates regarding the project and mailing an additional notification at least seven days prior to the start of facility operation. Staff also recommends that the Applicant be required to has also committed to provide the OPSB with a quarterly complaint updates during construction and the first five years of operation of the facility. Staff recommends that these reports be filed on the public docket.

As of September 13, 2021, the OPSB has received two public comments in this case. The commenters expressed concerns with being surrounded by the project on three sides of their property, dealing with additional vehicle traffic related to the project, visual impacts, impacts to local emergency services, government subsidies, the loss of agricultural land, and changes to wildlife movement patterns. The majority of these potential impacts are addressed in other sections of this report. All public comments are available for Board members and the public to view online in the case record at <http://dis.puc.state.oh.us>.

The Administrative Law Judge scheduled a public hearing and an evidentiary hearing for this proceeding. The public hearing will be held on September 28, 2021, beginning at 6 p.m. The evidentiary hearing is scheduled for October 28, 2021, at 10:00 a.m.

#19. 86. Marion County Solar Project, LLC's Response to the First Data Request from Staff of the OPSB, DR

87. Application at Exhibit D.

88. <https://www.marioncountysolarproject.com>.

Recommended Findings

Staff recommends that the Board find that the proposed facility would serve the public interest, convenience, and necessity, and therefore complies with the requirements specified in R.C. 4906.10(A)(6), provided that any certificate issued by the Board for the proposed facility include the conditions specified in the section of this *Staff Report of Investigation* entitled Recommended Conditions of Certificate.

Considerations for R.C. 4906.10(A)(7)

AGRICULTURAL DISTRICTS AND AGRICULTURAL LAND

Pursuant to R.C. 4906.10(A)(7), the Board must determine the facility's impact on the agricultural viability of any land in an existing agricultural district within the project area of the proposed facility. The agricultural district program was established under R.C. Chapter 929. Agricultural district land is exempt from sewer, water, or electrical service tax assessments.

Agricultural land can be classified as an agricultural district through an application and approval process that is administered through local county auditors' offices. Eligible land must be devoted exclusively to agricultural production or be qualified for compensation under a land conservation program for the preceding three calendar years. Furthermore, eligible land must be at least 10 acres in size or produce a minimum average gross annual income of \$2,500.

Approximately 710 acres of agricultural land would be taken out of service by the proposed project, including approximately 513 acres of agricultural district land. However, the repurposed land could be restored for agricultural use when the project is decommissioned.

The construction and operation of the proposed facility would disturb the existing soil and could lead to broken drainage tiles. A drain tile system consists of laterals, which are branches off a main, and main lines. Main lines can allow water to flow into or out of one parcel to another. The locating and avoiding of damaging drain tile mains can help prevent the pooling of water on project parcels and adjacent parcels.

When landowners lay down or repair drain tiles, they often keep records of the location of the drain tiles. The Applicant has consulted landowners and county officials to collect data on existing drain tiles within the project area. The Applicant has supplied a Drain Tile Mitigation Plan with its OPSB application (Exhibit AA). This report discusses repair and mitigation details and provides a map of all known drain tile locations. The Applicant has committed to promptly repair any drain tile found to be damaged by the project during the operational life of the project.

The Applicant has committed to take steps to address potential impacts to farmland, including repairing all drainage tiles damaged during construction and restoring temporarily impacted land to its original use. Excavated topsoil would be separated during construction and returned as topsoil after construction. Restored topsoil would be de-compacted and seeded after construction.

Recommended Findings

Staff recommends that the Board find that the impact of the proposed facility on the viability of existing agricultural land in an agricultural district has been determined, and therefore complies with the requirements specified in R.C. 4906.10(A)(7), provided that any certificate issued by the Board for the proposed facility include the conditions specified in the section of this *Staff Report of Investigation* entitled Recommended Conditions of Certificate.

Considerations for R.C. 4906.10(A)(8)

WATER CONSERVATION PRACTICE

Pursuant to R.C. 4906.10(A)(8), the proposed facility must incorporate maximum feasible water conservation practices, considering available technology and the nature and economics of the various alternatives.

Construction of the proposed facility would not require the use of significant amounts of water. Water may be utilized for dust suppression and control on open soil surfaces such as construction access roads or public roads as needed.

Operation of the proposed facility would also not require the use of significant amounts of water. The O&M building would have volumes of water use and wastewater discharge comparable to a small office building. The Applicant has stated that it would install and maintain modern, efficient water fixtures. If public utility services are unavailable in the project area, the Applicant anticipates that it would obtain water by drilling a new onsite water well and discharge wastewater/sewage through an onsite septic system for the O&M building.⁸⁹ The Applicant would depend on rainfall to clean the solar panels. The Applicant only anticipates occasional cleaning of panels when rainfall is insufficient. The Applicant estimates that approximately 431,000 gallons per wash event would be used.⁹⁰

Recommended Findings

Staff recommends that the Board find that the proposed facility would incorporate maximum feasible water conservation practices, and therefore complies with the requirements specified in R.C. 4906.10(A)(8), provided that any certificate issued by the Board for the proposed facility include the conditions specified in the section of this *Staff Report of Investigation* entitled Recommended Conditions of Certificate.

89. Application at pages 10 and 40.

90. Marion County Solar Project, LLC's August 23, 2021 Response to Fourth Data Request from Staff, Data Requests #15 and #16.

IV. RECOMMENDED CONDITIONS OF CERTIFICATE

Following a review of the application filed by the Marion County Solar Project, LLC, and the record compiled to date in this proceeding, Staff recommends that a number of conditions become part of any certificate issued for the proposed facility. These recommended conditions may be modified as a result of public or other input received subsequent to the issuance of this report. At this time, Staff recommends the following conditions to ensure conformance with the proposed plans and procedures as outlined in the case record to date, and to ensure compliance with all conditions listed in this Staff Report:

- (1) The Applicant shall install the facility, utilize equipment and construction practices, and implement mitigation measures as described in the application and as modified and/or clarified in supplemental filings, replies to data requests, and recommendations in this *Staff Report of Investigation*.
- (2) The Applicant shall conduct a preconstruction conference prior to the commencement of any construction activities. Staff, the Applicant, and representatives of the primary contractor and all subcontractors for the project shall attend the preconstruction conference. The conference shall include a presentation of the measures to be taken by the Applicant and contractors to ensure compliance with all conditions of the certificate, and discussion of the procedures for on-site investigations by Staff during construction. Prior to the conference, the Applicant shall provide a proposed conference agenda for Staff review and shall file a copy of the agenda on the case docket. The Applicant may conduct separate preconstruction conferences for each stage of construction.
- (3) Within 60 days after the commencement of commercial operation, the Applicant shall submit to Staff a copy of the as-built specifications for the entire facility. If the Applicant demonstrates that good cause prevents it from submitting a copy of the as-built specifications for the entire facility within 60 days after commencement of commercial operation, it may request an extension of time for the filing of such as-built specifications. The Applicant shall use reasonable efforts to provide as-built drawings in both hard copy and as geographically referenced electronic data.
- (4) Separate preconstruction conferences may be held for the different phases of civil construction and equipment installation. At least 30 days prior to each preconstruction conference, the Applicant shall submit to Staff, for review and acceptance, one set of detailed engineering drawings of the final project design for that phase of construction and mapping in the form of PDF, which the Applicant shall also file on the docket of this case, and geographically referenced data (such as shapefiles or KMZ files) based on final engineering drawings to confirm that the final design is in conformance with the certificate. Mapping shall include the limits of disturbance, permanent and temporary infrastructure locations, areas of vegetation removal and vegetative restoration as applicable, and specifically denote any adjustments made from the siting detailed in the application. The detailed engineering drawings of the final project design for each phase of construction shall account for geological features and include the identity of the registered professional engineer(s), structural engineer(s), or engineering firm(s), licensed to practice engineering in the state of Ohio who reviewed and approved the

designs. All applicable geotechnical study results shall be included in the submission of the final project design to Staff.

- (5) At least 30 days prior to the preconstruction conference, the Applicant shall provide Staff, for review and acceptance, the final geotechnical engineering report. This shall include a summary statement addressing the geologic and soil suitability.
- (6) Should karst features be identified during additional geotechnical exploration or during construction, the Applicant shall avoid construction in these areas when possible.
- (7) The Applicant shall adhere to a minimum solar equipment setback of 50 feet from any existing potable water supply wells.
- (8) The Applicant shall adhere to a minimum solar equipment setback of 10 feet from any existing non-potable water wells.
- (9) At least 30 days prior to the preconstruction conference, the Applicant shall submit its emergency response plan on the case docket for Staff for review and acceptance. That plan shall include a provision(s) to keep the appropriate representatives of the City of Marion, Aqua Ohio – Marion, and Enterprise Baptist Church informed of the status of any spills, significant panel damage, and associated repair/remediation schedule.
- (10) The certificate shall become invalid if the Applicant has not commenced a continuous course of construction of the proposed facility within five years of the date of journalization of the certificate unless the Board grants a waiver or extension of time.
- (11) As the information becomes known, the Applicant shall file on the public docket the date on which construction will begin, the date on which construction was completed, and the date on which the facility begins commercial operation.
- (12) Prior to the commencement of construction activities in areas that require permits or authorizations by federal or state laws and regulations, the Applicant shall obtain and comply with such permits or authorizations. The Applicant shall provide copies of permits and authorizations, including all supporting documentation, to Staff within seven days of issuance or receipt by the Applicant and shall file such permits or authorizations on the public docket. The Applicant shall provide a schedule of construction activities and acquisition of corresponding permits for each activity at the preconstruction conference.
- (13) The certificate authority provided in this case shall not exempt the facility from any other applicable and lawful local, state, or federal rules or regulations nor be used to affect the exercise of discretion of any other local, state, or federal permitting or licensing authority with regard to areas subject to their supervision or control.
- (14) At least 30 days prior to the start of construction, the Applicant shall file a copy of the final complaint resolution plan on the public docket. At least seven days prior to the start of construction and at least seven days prior to the start of facility operations, the Applicant shall notify via mail affected property owners and tenants including those individuals who were provided notice of the public informational meeting, residences

located within one mile of the project area, parties to this case, county commissioners, township trustees, emergency responders, airports, schools, and libraries, as well as anyone who has requested updates regarding the project. These notices shall provide information about the project, including contact information and a copy of the complaint resolution plan. The start of construction notice shall include written confirmation that the Applicant has complied with all preconstruction-related conditions of the certificate, as well as a timeline for construction and restoration activities. The start of facility operations notice shall include written confirmation that the Applicant has complied with all construction-related conditions of the certificate, as well as a timeline for the start of operations. The Applicant shall file a copy of these notices on the public docket. During the construction and operation of the facility, the Applicant shall submit to Staff a complaint summary report by the fifteenth day of April, July, October, and January of each year during construction and through the first five years of operation. The report shall include a list of all complaints received through the Applicant's complaint resolution process, a description of the actions taken toward the resolution of each complaint, and a status update if the complaint has yet to be resolved. The Applicant shall file a copy of these complaint summaries on the public docket.

- (15) The facility shall be operated in such a way as to assure that no more than 100 megawatts would be injected into the Bulk Power System at any time.
- (16) The Applicant shall not commence any construction of the facility until it has executed an Interconnection Service Agreement and Interconnection Construction Service Agreement with PJM Interconnection, which includes construction, operation, and maintenance of system upgrades necessary to integrate the proposed generating facility into the regional transmission system reliably and safely. The Applicant shall docket in the case record a letter stating that the Agreement has been signed or a copy of the executed Interconnection Service Agreement and Interconnection Construction Service Agreement.
- (17) Prior to construction, the Applicant shall finalize the architectural cultural resources investigations for the project. If the resulting survey work discloses a find of architectural significance, or a site that could be eligible for inclusion on the National Register of Historic Places, then the Applicant shall prepare a modification, or mitigation plan detailing how such site(s) will be avoided or impacts minimized. Any such mitigation effort, if needed, shall be developed in coordination with the OHPO and submitted to Staff for review and acceptance.
- (18) Prior to commencement of construction, the Applicant shall submit to Staff for approval a solar panel perimeter fence type that is both small-wildlife permeable and aesthetically fitting for a rural location. Following Staff approval, the Applicant shall file details of this solar panel perimeter fence on the public docket. This condition shall not apply to substation fencing.
- (19) Prior to commencement of construction, the Applicant shall prepare a landscape and lighting plan in consultation with a landscape architect licensed by the Ohio Landscape Architects Board that addresses the aesthetic and lighting impacts of the facility with an emphasis on any locations where an adjacent non-participating parcel contains a residence with a direct line of sight to the project area. The plan shall include measures

such as fencing, vegetative screening or good neighbor agreements. Unless alternative mitigation is agreed upon with the owner of any such adjacent, non-participating parcel containing a residence with a direct line of sight to the fence of the facility, the plan shall provide for the planting of vegetative screening designed by the landscape architect to enhance the view from the residence and be in harmony with the existing vegetation and viewshed in the area. The Applicant shall adjust its landscape and lighting plan to incorporate additional planting design features or measures to address aesthetic impacts to the traveling public, nearby communities, and recreationalists. The Applicant shall maintain vegetative screening for the life of the facility and the Applicant shall replace any failed plantings so that, after five years, at least 90 percent of the vegetation has survived. The Applicant shall maintain all fencing along the perimeter of the project in good repair for the term of the project and shall promptly repair any damage as needed. Lights shall be motion-activated and designed to narrowly focus light inward toward the facility, such as being downward-facing and/or fitted with side shields. The Applicant shall provide the plan to Staff for review and confirmation that it complies with this condition.

- (20) General construction activities shall be limited to the hours of 7:00 a.m. to 7:00 p.m., or until dusk when sunset occurs after 7:00 p.m. Impact pile driving shall be limited to the hours between 9:00 a.m. and 6:00 p.m. Impact pile driving may occur between 7:00 a.m. and 9:00 a.m., and after 6:00 p.m. or until dusk when sunset occurs after 6:00 p.m., if the noise impact at non-participating receptors is not greater than daytime ambient Leq plus 10 dBA. If impact pile driving is required between 7:00 a.m. and 9:00 a.m., and after 6:00 p.m. or until dusk when sunset occurs after 6:00 p.m., the Applicant shall install a noise monitor in a representative location to catalog that this threshold is not being exceeded. Hoe ram operations, if required, shall be limited to the hours between 10:00 a.m. and 4:00 p.m., Monday through Friday. Construction activities that do not involve noise increases above ambient levels at sensitive receptors are permitted outside of daylight hours when necessary. The Applicant shall notify property owners or affected tenants within the meaning of Ohio Adm.Code 4906-3-03(B)(2) of upcoming construction activities including potential for nighttime construction.
- (21) If the inverters or substation transformer chosen for the project have a higher sound power output than the models used in the noise model, the Applicant shall show that sound levels will not exceed the daytime ambient level plus five dBA at any non-participating sensitive receptor and will be submitted at least 30 days prior to construction. If noise data is not available from the inverter or transformer manufacturer, an operational noise test may be performed to comply with this condition. The test must be performed on a sunny day between 10:00 a.m. and 2:00 p.m. in the months of May-August, at a distance equal to the minimum distance from an inverter to a non-participating residence. If the test shows the operational noise level is greater than project area ambient Leq level plus five dBA additional noise mitigation will be required. This condition is complied with if the test shows the operational noise level is equal or less than project area ambient Leq level plus five dBA. The Applicant shall file a report on the public docket that shows either: 1) for the chosen inverter and substation transformer that sound levels will not exceed the daytime ambient level plus five dBA at any non-participating sensitive receptor, or 2) results of the operational noise test

showing that sound levels will not exceed the daytime ambient level plus five dBA at any non-participating sensitive receptor.

- (22) The Applicant shall avoid, where possible, or minimize to the extent practicable, any damage to functioning field tile drainage systems and soils resulting from the construction, operation, and/or maintenance of the facility in agricultural areas. Damaged field tile systems shall be promptly repaired or rerouted to at least original conditions or modern equivalent at the Applicant's expense to ensure proper drainage. However, if the affected landowner agrees to not having the damaged field tile system repaired, they may do so only if the field tile systems of adjacent landowners remain unaffected by the non-repair of the landowner's field tile system and the damaged field tile system does not include a lateral or main draining to or from an adjacent parcel.
- (23) The Applicant shall ensure that nearby parcels are protected from unwanted drainage problems due to construction and operation of the project. The Applicant shall ensure this by either 1) documenting benchmark conditions of surface and subsurface drainage systems prior to construction, including the location of laterals, mains, grassed waterways, and county maintenance/repair ditches. The Applicant will make efforts to conduct a perimeter dig utilizing a tile search trench and consult with owners of all parcels adjacent to the property, the county soil and water conservation district, and the county to request drainage system information over those parcels. The Applicant shall consult with the county engineer for tile located in a county maintenance/repair ditch, or 2) locate and replace all project field tile drainage systems in the project area, or 3) agree to compensate parcels owners affected by damage to functioning field tile drainage systems and soils resulting from the construction, operation, and/or maintenance of the facility in agricultural areas for damage to crops or other agricultural activities.
- (24) The Applicant shall contact Staff, the ODNR, and the USFWS within 24 hours if state or federal listed species are encountered during construction activities. Construction activities that could adversely impact the identified plants or animals shall be immediately halted until an appropriate course of action has been agreed upon by the Applicant, Staff and the appropriate agencies.
- (25) If the Applicant encounters any new listed plant or animal species or suitable habitat of these species prior to construction, the Applicant shall include the location in the final engineering drawings and associated mapping. The Applicant shall avoid impacts to these species and explain how impacts would be avoided during construction.
- (26) The Applicant shall construct the facility in a manner that incorporates post construction stormwater management under OHC00005 (Part III.G.2.e, pp. 19-27) in accordance with the Ohio Environmental Protection Agency's Guidance on Post-Construction Storm Water Controls for Solar Panel Arrays.
- (27) The Applicant shall adhere to seasonal cutting dates of October 1 through March 31 for the removal of trees three inches or greater in diameter to avoid impacts to listed bat species, unless coordination with the Ohio Department of Natural Resources (ODNR) and the U.S. Fish and Wildlife Service (USFWS) allows a different course of action. If coordination with these agencies allows clearing between April 1 and September 30, the

Applicant shall docket proof of completed coordination on the case docket prior to clearing trees.

- (28) The Applicant shall conduct no in-water work in perennial streams from April 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat, unless coordination efforts with the Ohio Department of Natural Resources allows a different course of action.
- (29) The Applicant shall take steps to prevent establishment and/or further propagation of noxious weeds identified in Ohio Adm.Code Chapter 901:5-37 during implementation of any pollinator-friendly plantings.
- (30) Prior to commencement of construction activities that require transportation permits, the Applicant shall obtain all such permits. The Applicant shall coordinate with the appropriate authority regarding any temporary road closures, road use agreements, driveway permits, lane closures, road access restrictions, and traffic control necessary for construction and operation of the proposed facility. Coordination shall include, but not be limited to, the Marion County Engineer, the ODOT, local law enforcement, and health and safety officials. The Applicant shall detail this coordination as part of a final transportation management plan submitted to Staff prior to the preconstruction conference for review and confirmation by Staff that it complies with this condition and then file the plan on the public docket. This final transportation management plan would include any county required road use maintenance agreements. Any damaged public roads, culverts and bridges would be repaired promptly to their previous or better condition by the Applicant under the guidance of the appropriate regulatory authority. Any temporary improvements would be removed unless the appropriate regulatory authority requests that they remain in place.
- (31) At least 30 days prior to the preconstruction conference, the Applicant shall submit an updated decommissioning plan (which shall include not only solar components but also BESS components) and total decommissioning cost estimate without regard to salvage value on the public docket that includes: (a) a provision that the decommissioning financial assurance mechanism include a performance bond where the company is the principal, the insurance company is the surety, and the Ohio Power Siting Board is the obligee; (b) a timeline of up to one year for removal of the equipment; (c) a provision to monitor the site for at least one additional year to ensure successful revegetation and rehabilitation; (d) a provision where the performance bond is posted prior to the commencement of construction; (e) a provision that the performance bond is for the total decommissioning cost and excludes salvage value; (f) a provision to coordinate repair of public roads damaged or modified during the decommissioning and reclamation process; (g) a provision that the decommissioning plan be prepared by a professional engineer registered with the state board of registration for professional engineers and surveyors; (h) a provision stating that the bond shall be recalculated every five years by an engineer retained by the Applicant; (i) a provision that the BESS decommissioning cost estimate not include salvage value; and (j) a provision that the BESS decommissioning cost include a significant contingency percentage which can be lowered to ten percent if the Applicant demonstrates environmental insurance coverage has been obtained that covers hazardous waste remediation.

- (32) At the time solar panel end of life disposal, retired panels marked for disposal shall be sent to an engineered landfill with various barriers and methods designed to prevent leaching of materials into soils and groundwater.



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Case No(s). 21-0036-EL-BGN

Summary: Staff Report of Investigation electronically filed by Mr. Matt Butler on behalf of Staff of OPSB